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North Central Forest Experiment Station

Resource Bulletin **NC-91**

Nebraska Forest Statistics, 1983

Gerhard K. Raile

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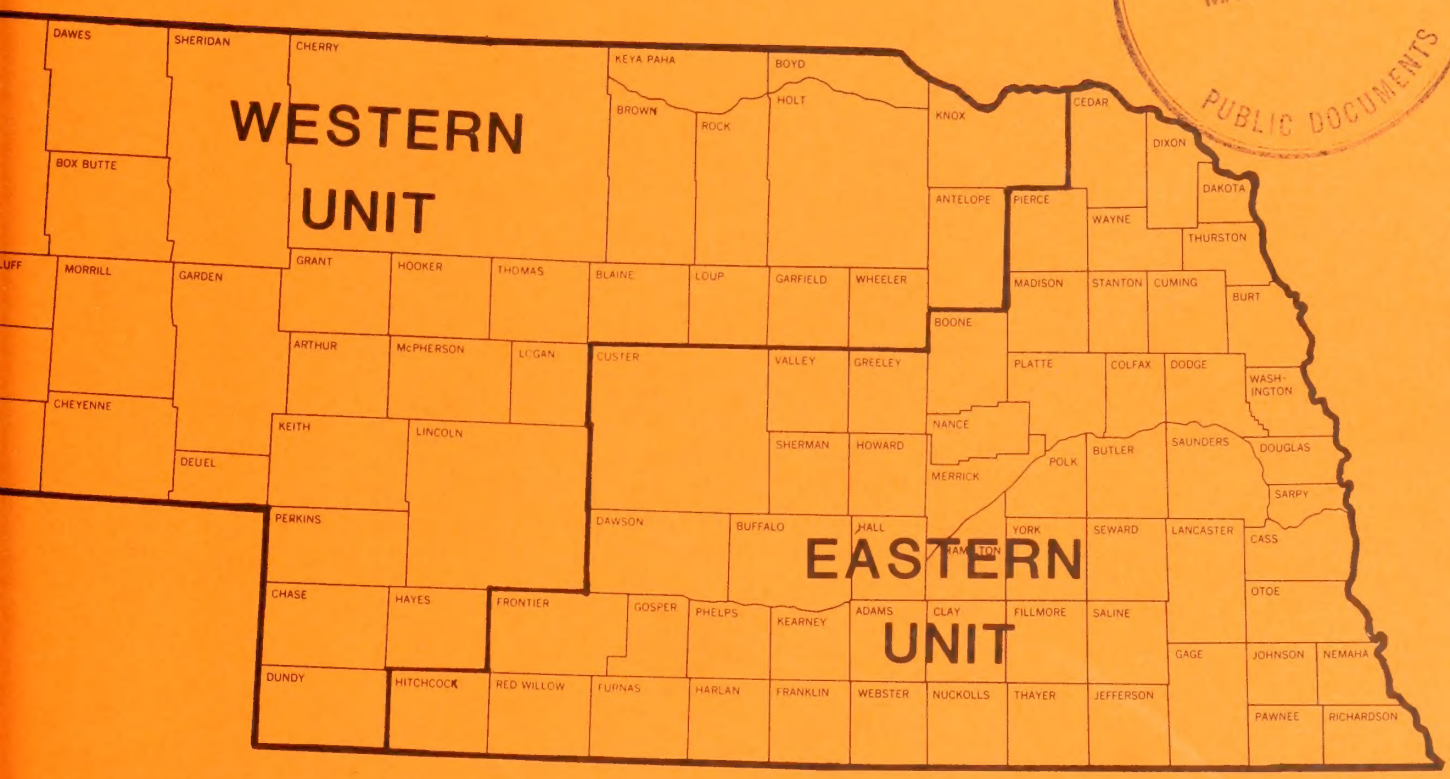

Information contained in this report includes the most commonly used Forest Inventory and Analysis (FIA) statistics. However, additional forest resource data can be provided to interested users. Persons requesting additional information that can be provided from the raw inventory data are expected to pay for the retrieval costs. These costs will vary, depending on the complexity of the request, from less than $100 for a simple request to $2,000 for a complete retrieval involving the services of a FIA computer programmer. If requests for data conflict with ongoing work, they will be scheduled so as to minimize the impact on the work unit.

Address requests for unpublished information to:

Burton L. Essex
Forest Inventory and Analysis Project
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108
Phone: (612) 642-5275

Area served: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern South Dakota, Wisconsin.

North Central Forest Experiment Station
Forest Service--U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
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FOREWORD

Forest Inventory and Analysis (FIA) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974. Prior inventories were mandated by the McSweeney-McNary Forest Research Act of 1928. The objective of FIA is to periodically inventory the Nation's forest land to determine its extent, condition, and volume of timber, growth, and depletions. Up-to-date resource information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Inventory and Analysis work in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern South Dakota, and Wisconsin.

Fieldwork for the 1983 Nebraska Forest Survey began in April 1982 and was completed in March 1983. The previous survey of Nebraska timber resources was dated 1955. The Nebraska Forest Service canvassed mills and provided the fuelwood and post statistics.

Aerial photos used in this inventory were furnished by the USDA Agricultural Stabilization and Conservation Service offices in each county.

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NEBRASKA FOREST STATISTICS, 1983

Gerhard K. Raile, *Mensurationist*

HIGHLIGHTS

Area

- Forest land area totaled 718,300 acres--1.5 percent of the State's total land area.
- Twenty-three percent of the State's forest land is unproductive.
- Commercial forest land decreased by 25 percent between 1955 and 1983, from 714,700 to 537,800 acres.
- Farmers own 71 percent of the State's commercial forest land.
- Forty percent of the commercial forest land is in sawtimber stands of ponderosa pine (129,700 acres) and elm-ash-cottonwood (85,800 acres).
- Sawtimber stands account for 69 percent of the commercial forest followed by poletimber stands (17 percent), sapling and seedling stands (13 percent), and nonstocked areas (1 percent).
- Stands between 60 and 101 years of age occupy 48 percent of the commercial forest.
- Thirty-nine percent of the commercial forest is poorly stocked (16.7 to 60 percent), 49 percent is medium stocked (61 to 100 percent), and 10 percent is well stocked (101 to 133 percent) with growing-stock trees.
- Wooded strips occupy 262,200 acres. Wooded strips are not classified as commercial forest because they are too narrow to meet the definition.
- Windbreaks amount to 139,100 acres and are part of the 1,111,700 acres of nonforest land with trees in the State.

Volume

- The total volume of timber on commercial forest land in 1983 was 561.6 million cubic feet--456.0 million in growing-stock trees, 96.3 million in cull trees, and 9.3 million in salvable dead trees.
- Growing-stock volume increased 23 percent from 370.2 million cubic feet in 1955 to 456.0 million cubic feet in 1983.
- Growing-stock volume per acre increased 64 percent from 518 cubic feet in 1955 to 848 cubic feet in 1983.
- Elm growing stock dropped drastically due to Dutch elm disease--from 51.3 million cubic feet in 1955 to 12.4 million cubic feet in 1983.
- Ponderosa pine is the species with the most sawtimber volume on commercial forest land (46 percent of the total), followed by cottonwood (30 percent) and bur oak (7 percent).
- Farmers own 78 percent of the growing-stock volume (327.4 million cubic feet).
- The ponderosa pine type accounts for 34 percent, the cottonwood type for 23 percent, and the elm-ash-cottonwood type for 19 percent of the growing-stock volume.
- The ponderosa pine type has the most sawtimber volume per acre with 5,216 board feet.

Stand Conditions

- Net annual growth of growing stock amounted to 11.1 million cubic feet in 1982, 2.4 percent of inventory.
- Sawtimber growth was 42.7 million board feet in 1982, 2.5 percent of inventory.
- Mortality of growing-stock trees totaled 2.2 million cubic feet in 1982, 0.5 percent of inventory.
- Weather accounts for 17 percent of the sawtimber mortality.
- Almost two-thirds of the sawtimber volume by butt log grade is concentrated in log grade 3.

Timber Use

- Timber removals from growing stock totaled 9.4 million cubic feet in 1982--8.4 million for roundwood products, 440,000 for logging residue, and 513,000 for other removals.
- Removals of growing stock for 1982 were 147 percent higher than those in 1953.
- Farmers and miscellaneous private individuals owned 99 percent of the 1982 growing-stock removals.
- Sawtimber removals from commercial forest land totaled 36.3 million board feet in 1982, 102 percent higher than in 1953.
- Growing-stock removals for roundwood products totaled 8,397,000 cubic feet--62 percent as firewood, 35 percent as saw logs, and 3 percent as other products.

- Wood residue from primary plants amounted to 1,647,300 cubic feet--69 percent of it was used for domestic fuel and products such as livestock bedding, and mulch.

Biomass

- Live tree biomass (trees greater than 1 inch d.b.h.) totaled 29 million green tons or 54 tons per acre of commercial forest land.
- Highest yields per acre of live tree biomass are in the cottonwood type (72 tons) and the oak-hickory type (67 tons).
- Sixty-six percent of the live tree biomass is in the boles of trees greater than 5-inches d.b.h., 27 percent is in the tops and limbs of these trees, and 7 percent is in trees less than 5 inches d.b.h.

APPENDIX

ACCURACY OF SURVEY

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State level. Consequently, the reported figures are estimates only. The sampling errors mean the chances are two out of three that the true inventory value is within the limits indicated.

For example, the estimated growing-stock volume in Nebraska in 1983, 456.0 million cubic feet, has a sampling error of ± 8.6 percent (± 39.2 million cubic feet). Therefore, the growing-stock volume from a 100 percent inventory would have a two in three chance of falling between 416.8 and 495.2 million cubic feet.

The following tabulation shows the sampling errors for the 1983 Nebraska inventory:

Item	Unit totals	Sampling error
Growing stock	(Thousand cubic feet)	(Percent)
Volume	456,011	8.6
Growth	11,099	10.9
Removals	9,350	20.6
Sawtimber	(Thousand board feet)	
Volume	1,711,873	9.4
Growth	42,729	14.3
Removals	36,264	20.9
Commercial forest area	(Thousand acres)	
	537.8	6.0

As survey data are broken down into smaller sections, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for growing-stock volume in a particular county is higher than that for total growing-stock volume in the State (table 89 shows the sampling errors for smaller estimates).

SURVEY PROCEDURE

The major steps in the survey of Nebraska were as follows:

1. A total of 260,180 1-acre points were systematically distributed across aerial photos of the entire State. To make a preliminary estimate of forest area, photo interpretors classified these points as forest land (5,564), nonforest land with trees (4,770), nonforest land without trees (247,873), questionable (69), and water (1,904). Next, all of the forest, nonforest with trees, and questionable points were stereoclassified as to forest type, stand-size class, and density. Then 306 points classed as forest, 3 points classes as questionable, and 273 points classed as nonforest with trees were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the aerial photos were taken. At each of 159 commercial forest locations, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. Tree measurements made at commercial forest locations were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization during 1980 were obtained from mill surveys. The Nebraska Forest Service canvassed resident sawmills and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-State primary wood-using mills such as sawmills and veneer mills to determine their use of timber from Nebraska. The Nebraska Forest Service supplied 1980 estimates of fuelwood and post production from roundwood.

3. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Nebraska primary wood-using plants. Timber cut for products by ownership class was determined by a canvass of public and forest industry timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners".

4. Wood utilization factors for converting fuelwood, posts, and timber products output to removals from growing-stock were obtained during the 1971-1972 Missouri utilization study.

5. Field data were sent to St. Paul, Minnesota, to be processed and analyzed.

COMPARING NEBRASKA'S SECOND SURVEY WITH THE FIRST SURVEY

Data from new forest surveys are often compared with data from earlier ones to determine trends in forest areas and volumes. Changes in procedures and definitions between surveys make it necessary to adjust earlier survey data so they are comparable to data from the new survey.

The published 1955 area of commercial forest land, 1,050,800 acres, was adjusted due to definitional changes between surveys. Some land now defined as nonforest with trees was defined as commercial forest land in 1955. Also, new site productivity curves for ponderosa pine caused some land previously classified as commercial to be classified as unproductive forestland in the current survey. The adjusted 1955 area (705,700 acres) can be compared directly with the 1983 area (537,800 acres).

The Timber Resource Analysis System (a USDA Forest Service computer program for updating, backdating, and projecting timber volume, growth, mortality, and removals) recalculated 1955 volumes using 1983 estimates of cubic foot volume per tree and 1983 board foot-cubic foot ratios. This adjustment was necessary so that volume differences between surveys would represent actual changes and not merely changes in the volume equations used on each occasion.

LOG GRADE

In Nebraska the butt log of every sawtimber tree sampled was graded for quality. Logs were graded on the basis of external characteristics. Hardwood species were graded according to "Hardwood Log Grades for Standard lumber"[1]. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded as follows:

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[1] *Vaughn, C. L.; Wollin, C. A.; McDonald, K. A.; Bulgrin, E. H. Hardwood log grades for standard lumber. Res. Pap. FPL-63. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory; 1966. 52 p.*

Forest Service standard grades for hardwood factory saw logs

Grading factors		Specifications							
		Log grade 1			Log grade 2				Log grade 3
Position in tree		Butts only	Butts and uppers		Butts and uppers				Butts and uppers
Scaling diameter, inches		[1]13-15	16-19	20+	[2]11+	12+			8+
Length without trim, feet			10+		10+	8-9	10-11	12+	8+
Required clear cuttings[3] of each of three best faces[4]	Min. length, feet	7	5	3	3	3	3	3	2
	Max. number	2	2	2	2	2	2	3	No Limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep and crook allowance	For logs with less than one-fourth of end in sound defects		15 percent			30 percent			50 percent
	For logs with more than one-fourth of end in sound defects		10 percent			20 percent			35 percent
Maximum scaling deduction			40 percent[5]			50 percent[6]			50 percent

[1]Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.
[2]Ten-inch logs of all species can be #2's if they otherwise meet requirements for small #1's.
[3]A clear cutting is a portion of a face, extending the width of the face, that is free of defects.
[4]A face is one-fourth of the surface of the log as divided lengthwise.
[5]Otherwise #1 logs with 41-60 percent deductions can be #2.
[6]Otherwise #2 logs with 51-60 percent deductions can be #3.

Forest Service standard specifications for hardwood construction logs (tie and timber logs)

Position in tree		Butt and upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		One-fourth of the diameter at the small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of one-third of the log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed one-third of the log diameter at point of occurrence.
	Holes	Any number provided none has a diameter over one-third of the log diameter at point of occurrence, and none extends more than 3 inches into included timber.[2]
Unsound surface defects		Same requirements as for sound defects if they extend into included timber.[2] No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit one shake not to exceed one-fourth the scaling diameter and will admit a longitudinal split not extending more than 5 inches into the contained timber.

[1]These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only non-factory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection of construction logs is given first priority, then it may be necessary to subdivide the class into grades.

[2]Included timber is always square, and dimension is judged from small end.

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Softwood species were graded according to the following specifications:

LOG GRADES FOR SOFTWOOD LOGS

Grade 1

1. Logs must be 16 inches or larger, 10 feet or longer, and with deduction for defect not over 30 percent of gross scale.
2. Logs must be at least 75 percent clear on each of three faces.
3. All knots outside clear cutting must be sound and not over 2-½ inches in diameter.

Grade 2

1. Logs must be 12 inches or larger, 10 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.
2. Logs must be at least 50 percent clear on each of three faces or 75 percent clear on two faces.

Grade 3

Logs must be 6 inches or larger, 8 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.

Note: (A) Diameters are diameter inside bark at small end of log.
(B) Percent clear refers to percent clear in one continuous section.

PRINCIPAL TREE SPECIES GROUPS IN NEBRASKA[2]

Softwoods
- Ponderosa pine ..... *Pinus ponderosa*
- Eastern redcedar ..... *Juniperus virginiana*
- Other softwoods
  - Rocky mountain juniper.. *Juniperus scopulorum*

Hardwoods
- White oak
  - Bur oak ..... *Quercus macrocarpa*
  - White oak ..... *Quercus alba*
  - Chinkapin oak ..... *Quercus muehlenbergii*
  - Post oak ..... *Quercus stellata*
- Red oak
  - Northern red oak ..... *Quercus rubra*
  - Black oak ..... *Quercus velutina*
- Hickory
  - Shagbark hickory ..... *Carya ovata*
  - Bitternut hickory ..... *Carya cordiformis*
- Basswood
  - American basswood ..... *Tilia americana*
- Soft maple
  - Red maple ..... *Acer rubrum*
  - Silver maple ..... *Acer saccharinum*
- Boxelder ..... *Acer negundo*
- Elm
  - American elm ..... *Ulmus americana*
  - Siberian elm ..... *Ulmus pumila*
  - Slippery elm ..... *Ulmus rubra*
  - Rock elm ..... *Ulmus thomasii*
- Green ash ..... *Fraxinus pennsylvanica*
- Cottonwood
  - Eastern cottonwood ..... *Populus deltoides*
  - Plains cottonwood ..... *Populus deltoides* var. *occidentalis*
- Black willow ..... *Salix nigra*
- Hackberry ..... *Celtis occidentalis*
- Black walnut ..... *Juglans nigra*
- Other hardwoods
  - Honeylocust ..... *Gleditsia triacanthos*
  - Red mulberry ..... *Morus rubra*
  - Paper birch ..... *Betula papyrifera*
  - Texas buckeye ..... *Aesclus glabra* var. *arguta*
  - Northern catalpa ..... *Catalpa speciosa*
  - Kentucky coffeetree ..... *Gymnocladus dioicus*
  - Osage orange ..... *Maclura pomifera*
  - Black locust ..... *Robinia pseudoacacia*
  - White mulberry ..... *Morus alba*

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.

DEFINITION OF TERMS

Basal area.--The area in square feet of the cross section at breast height of a single tree. When the basal area of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass.--The above-ground volume of all live trees (including bark and foliage). Biomass is made up of 5 components:

Growing-stock bole.--Biomass of a growing-stock tree from a 1-foot stump to a variable 4-inch top.

Growing-stock tops and limbs.--Biomass of a growing-stock tree from a 1-foot stump minus the growing-stock bole.

Cull bole.--Biomass of a cull tree from a 1-foot stump to a variable 4-inch top.

[2]*The common and scientific names are based on: Little, Elbert L., Jr. Checklist of United States Trees (Native and Naturalized). Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture, Forest Service; 1979. 375 p.*

Cull tops and limbs.--Biomass of a cull tree from a 1-foot stump minus the cull bole.

1- to 5-inch trees.--Biomass of all live trees from 1- to 5-inches in diameter at breast height.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land are capable of producing more than 20 cubic feet per acre per year of annual growth when managed. Currently inaccessible and inoperable areas are included except when the areas involved are small and unlikely to become suitable for producing industrial wood in the foreseeable future.)

Commercial species.--Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.--Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Cull.--Portions of a tree that are unusable for industrial wood products because of rot, form, or other defect.

Diameter classes.--A classification of trees based on diameter outside bark, measured at breast height (4½ feet above the ground). (Note: d.b.h. is the common abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h. inclusive.)

Farm.--Any land from which $1,000 or more of agricultural products were produced and sold during the year.

Farmer-owned lands.--Land owned by operators of farms. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest industry land.--Land owned by companies or individuals operating primary wood-using plants, except sawmills sawing less than 100,000 board feet annually.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classes as forest if less than 120 feet wide. Also see definitions of land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, nonforest land, and water.

Forest trees.--Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Forest types.--A classification of forest land based upon the species forming a plurality of live tree stocking. Major forest types in Nebraska are:

Ponderosa pine.--Forests in which ponderosa pine comprises a plurality of the stocking.

Eastern redcedar-hardwood.--Forests in which hardwoods comprise a plurality of the stocking but in which eastern redcedar comprises 25 percent or more of the stocking. Found on dry uplands, usually abandoned pastures or fields.

Oak-hickory.--Forests in which upland oaks (white, black) or hickory, singly or in combination, comprise a plurality of the stocking, except for stands classed as eastern redcedar-hardwood or as bur oak. Occurs on a variety of soils.

Bur oak.--Forests in which bur oak comprises a majority of the stocking. Occurs on dry uplands and ridges.

Elm-ash-cottonwood.--Lowland forest in which elm, ash, cottonwood, and willow, singly or in combination, comprise a plurality of the stocking, except for those in which cottonwood or willow comprise a majority of the stocking. Found on first or second bottoms of major streams.

Cottonwood.--Forests in which cottonwood comprises a majority of the stocking.

Lowland plains hardwoods.--Forests in which black walnut, hackberry, bur oak, soft maple, and boxelder, singly or in combination, comprise a plurality of the stocking. Commonly found in coves and bottomlands.

Gross area.--The entire area of land and water as determined by the Bureau of the Census, 1970.

Growing-stock trees.--Live trees of commercial species, excluding rough and rotten trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and over, from a 1-foot stump to a minimum 4 inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs. Cubic feet can be converted to standard cords by dividing by 79. One standard cord is 128 cubic feet of stacked wood, including bark and air.

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.--Includes former cropland, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivating, seeding, irrigating, or clearing of trees or brush and less than 16.7 percent stocked with live trees.

Indian land.--All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Land area.--A. *Bureau of the Census*.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

B. *Forest Inventory and Analysis*.--The same as the Bureau of the Census, except minimum width of streams, etc., is 120 feet and minimum size of lakes, etc., is 1 acre.

Live trees.--Growing-stock, rough, and rotten trees 1 inch d.b.h. and larger.

Log grades.--A classification of logs based on external characteristics as indicators of quality or value. (See Appendix for specific grading factors used.)

Logging residues.--The unused growing stock portions of trees cut or killed by logging.

Maintained road.--Any road, hard-topped or other surfaces, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.--Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Merchantable.--Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

Miscellaneous federal land.--Federal land other than National Forest and Indian land.

Miscellaneous private land.--Privately owned land other than forest-industry and farmer-owned land.

Mortality.--The volume of sound wood in growing-stock and sawtimber trees that die annually.

National Forest land.--Federal land that has been legally designated as National forest or purchase units, and other land administered by the USDA Forest Service.

Net annual growth of growing stock.--The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber.--The annual change in the volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, power-line clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

a. *Nonforest land without trees*.--Nonforest land with no live trees present.

b. *Nonforest land with trees*.--Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other removals.--Growing-stock trees removed but not utilized for products, or trees left standing but "removed" from the commercial forest land classification by land use change. Examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Ownership.--Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.--The amount of commercial forest land owned by one owner, regardless of the number of parcels.

Owner tenure.--The length of time a property has been held by the owner.

Physiographic class.--A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are:

Xeric sites.--Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Xeromesic sites.--Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. Example: dry oak ridge.

Mesic sites.--Deep, well-drained soils. Growth and species occurrence are limited only by climate.

Hydromesic sites.--Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent. Example: better drained bottomland hardwood sites.

Hydric sites.--Very wet sites where excess water seriously limits both growth and species occurrence. Example: frequently flooded river bottoms and spruce bogs.

Plant residues.--Wood and bark materials generated at manufacturing plants during production of other products.

Poletimber stands.--(See stand-size class.)

Poletimber trees.--Growing-stock trees of commercial species at least 5 inches d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land but withdrawn from timber utilization through statute, administration regulation, designation, or exclusive use for Christmas tree production, as indicated by annual shearing.

Productive-deferred.--Forest land sufficiently productive to qualify as commercial forest land but presently withdrawn from timber utilization because it is being considered for possible inclusion into the Wilderness system.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of extra cull volume in a tree is rotten.

Rough trees.--(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Roundwood products.--Logs, bolts, or other round sections (including chips from roundwood) cut from trees for industrial or consumer uses. (Note: Includes saw logs, veneer logs and bolts; cooperage logs and bolts; pulpwood, fuelwood; piling; poles; posts; hewn ties; mine timbers; and various other round, split, or hewn products.

Salvable dead trees.--Standing or down dead trees considered merchantable by regional standards.

Saplings.--Live trees 1 to 5 inches d.b.h.

Sapling-seedling stands.--(See stand-size class.)

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) for softwoods of 7 inches (9 inches for hardwoods) or other combinations of size and defect specified by regional standards.

Saw log portion.--That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber stands.--(See stand-size class.)

Sawtimber trees.--Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9 inches d.b.h. Hardwoods must be at least 11 inches d.b.h.

Sawtimber volume.--Net volume of the saw log portion of live sawtimber in board feet, International ¼-inch rule, from stump to a minimum 7 inches top diameter outside bark (d.o.b.) for softwoods and a minimum 9 inches top d.o.b. for hardwoods.

Seedlings.--Live trees less than 1 inch d.b.h. that are expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Short-log (rough tree).--Sawtimber-size trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.--An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.--A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class.--Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.--The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber, or seedlings and saplings.

a. *Sawtimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber and/or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

b. *Poletimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

c. *Sapling-seeding stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which

more than half of the stocking is saplings and/or seedlings.

d. *Nonstocked stands.*--Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.--Land either owned by States or leased to them, for 50 years more.

Stocking.--The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h.

Stands are grouped into the following stocking classes:

Overstocked stands.--Stands in which stocking of trees is 134.0 percent or more.

Fully-stocked stands.--Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium-stocked stands.--Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly-stocked stands.--Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.--Commercial forest land on which stocking of trees is less than 16.7 percent.

Timber removals from growing stock.--The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals.

Timber removals from sawtimber.--The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output.--All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree biomass.--The total aboveground weight (including the bark) of all trees from 1 to 5 inches in d.b.h., and the total aboveground weight (including the bark) from a 1-foot stump for trees more than 5 inches in diameter.

Tree size class.--A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural conditions because of adverse site conditions. (Note: Adverse conditions include shallow soil, dry climate, poor drainage, high elevation, steepness, and rockiness.)

Upper stem portion.--That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4 inches outside bark or to the point where the central stem breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards, cemeteries, roads; railroads; airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified land use class.

Water.--(a) *Bureau of the Census.*--Permanent inland water surfaces, such as lakes, reservoirs, and ponds at least 40 acres in area; and streams, sloughs, estuaries, and canals at least one-eighth of a statute mile wide.

(b) *Noncensus.*--Permanent inland water surfaces, such as lakes, reservoirs, and ponds from 1 to 39.9 acres in area; and streams, sloughs, estuaries, and canals from 120 feet to one-eighth of a statute mile wide.

Windbreak.--A group of trees less than 120 feet wide used for protecting soil, cropfields, and buildings.

Wooded pasture.--Improved pasture with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing.

Wooded strip.--An acre of more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide.

Table 1.--Area of land by land class, Nebraska[1/], 1955 and 1983

(In thousand acres)

Land class	1955	1983
Forest land:		
Commercial forest land		
Ponderosa pine	147.2	146.1
Eastern redcedar-hardwood	12.5	42.2
Oak-hickory	28.3	24.7
Bur oak	45.1	37.4
Elm-ash-cottonwood	109.5	122.0
Cottonwood	83.3	82.8
Lowland plains hardwoods	68.6	76.5
Nonstocked	220.2	6.1
Subtotal	714.7	537.8
Noncommercial forest land:		
Unproductive	174.8	162.3
Productive-reserved	13.8	18.2
Subtotal	188.6	180.5
Total	903.3	718.3
Nonforest land:	48,161.0	48,333.8
All land	49,064.3[2/]	49,052.1[3/]

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1983 areas because of changes in survey definitions and procedures.

[2/] 1950, Bureau of Census.

[3/] 1980, Bureau of Census.

Table 2.--Area by land class and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Land class	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
FOREST LAND			
Commercial forest land	537.8	278.9	258.9
Noncommercial forest land			
Unproductive	162.3	92.7	69.6
Productive-reserved	18.2	10.3	7.9
Subtotal	180.5	103.0	77.5
Total	718.3	381.9	336.4
NONFOREST LAND			
Nonforest with trees			
Cropland	41.8	31.5	10.3
Improved pasture[1/]	582.5	221.6	360.9
Wooded strips[2/]	262.2	159.0	103.2
Idle farmland	--	--	--
Marsh	7.8	2.3	5.5
Windbreaks[3/]	139.1	90.8	48.3
Wooded pasture[1/]	78.3	35.2	43.1
Subtotal	1,111.7	540.4	571.3
Nonforest without trees			
Cropland	25,484.6	16,515.8	8,968.8
Improved pasture[1/]	20,246.0	3,921.5	16,324.5
Idle farmland	3.5	--	3.5
Marsh	191.4	37.4	154.0
Other farm-farmstead	123.2	85.5	37.7
Urban and other	1,126.6	820.4	306.2
Noncensus water	46.8	30.1	16.7
Subtotal	47,222.1	21,410.7	25,811.4
Total	48,333.8	21,951.1	26,382.7
TOTAL LAND[4/]	49,052.1	22,333.0	26,719.1
WATER (BUREAU OF THE CENSUS)[4/]	455.1	204.3	250.8
TOTAL LAND AND WATER[4/]	49,507.2	22,537.3	26,969.9

[1/] Includes areas classified as range by the USDA Soil Conservation Service.

[2/] An acre or more of natural continuous forest land less than 120 feet wide that would otherwise meet survey standards.

[3/] A group of trees less than 120 feet wide used for the protection of soil, cropfields, and buildings in use.

[4/] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

Table 3.--Area of land and forest land by county, Nebraska, 1983

EASTERN UNIT

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Acres				Percent	Acres			Percent
Adams	360,864	2,692	407	2,285	0.6	10,083	2,603	7,480	2.8
Boone	439,942	2,954	387	2,567	0.6	9,481	1,875	7,606	2.2
Buffalo	605,062	10,721	3,956	6,765	1.1	4,066	729	3,337	0.7
Burt	310,982	6,026	1,170	4,856	1.6	9,208	2,614	6,594	3.0
Butler	373,888	4,490	930	3,560	1.0	2,090	618	1,472	0.6
Cass	356,506	16,361	3,971	12,390	3.5	16,072	3,779	12,293	4.5
Cedar	473,626	7,915	2,122	5,793	1.2	16,541	4,849	11,692	3.5
Clay	367,309	2,038	360	1,678	0.5	3,482	913	2,569	0.9
Colfax	262,618	4,729	1,222	3,507	1.3	1,814	642	1,172	0.7
Cuming	367,725	6,437	964	5,473	1.5	7,143	2,045	5,098	1.9
Custer	1,645,619	18,822	5,806	13,016	0.8	49,788	14,241	35,547	3.0
Dakota	164,864	7,841	1,887	5,954	3.6	7,257	1,417	5,840	4.4
Dawson	628,429	13,840	7,669	6,171	1.0	8,760	3,307	5,453	1.4
Dixon	303,494	10,108	2,263	7,845	2.6	11,716	3,838	7,878	3.9
Dodge	341,779	8,294	2,248	6,046	1.8	14,104	3,738	10,366	4.1
Douglas	212,941	8,444	1,611	6,833	3.2	10,212	1,951	8,261	4.8
Fillmore	368,928	924	182	742	0.2	456	136	320	0.1
Franklin	368,704	4,090	603	3,487	0.9	14,169	3,786	10,383	3.8
Frontier	624,403	3,832	2,402	1,430	0.2	10,018	2,397	7,621	1.6
Furnas	461,389	5,237	1,908	3,329	0.7	5,614	1,880	3,734	1.2
Gage	549,139	9,218	1,502	7,716	1.4	34,820	11,382	23,438	6.3
Gosper	294,886	697	220	477	0.2	347	130	217	0.1
Greeley	365,062	528	205	323	0.1	3,667	1,316	2,351	1.0
Hall	343,533	5,271	1,573	3,698	1.1	5,793	1,869	3,924	1.7
Hamilton	347,264	2,876	916	1,960	0.6	2,309	420	1,889	0.7
Harlan	355,277	4,006	1,072	2,934	0.8	1,601	445	1,156	0.5
Hitchcock	453,702	4,227	1,459	2,768	0.6	7,257	2,172	5,085	1.6
Howard	361,075	5,523	1,580	3,943	1.1	19,210	6,581	12,629	5.3
Jefferson	367,693	13,721	2,946	10,775	2.9	12,887	3,441	9,446	3.5
Johnson	240,999	9,734	2,361	7,373	3.1	14,696	3,947	10,749	6.1
Kearney	331,910	224	72	152	--	120	24	96	--
Lancaster	536,973	6,803	1,966	4,837	0.9	25,488	9,561	15,927	4.7
Madison	368,224	3,152	858	2,294	0.6	7,780	2,652	5,128	2.1
Merrick	305,971	7,911	3,315	4,596	1.5	9,005	2,918	6,087	2.9
Nance	281,235	10,259	2,586	7,673	2.7	4,795	1,074	3,721	1.7
Nemaha	261,453	11,430	3,067	8,363	3.2	11,123	3,854	7,269	4.3
Nuckolls	368,429	5,475	1,381	4,094	1.1	6,034	1,678	4,356	1.6
Otoe	393,843	10,989	2,275	8,714	2.2	14,128	4,604	9,524	3.6
Pawnee	276,864	9,696	2,845	6,851	2.5	11,584	2,982	8,602	4.2
Phelps	345,530	532	71	461	0.1	302	66	236	0.1
Pierce	367,834	3,047	1,116	1,931	0.5	5,129	1,879	3,250	1.4
Platte	428,314	4,585	780	3,805	0.9	2,642	500	2,142	0.6
Polk	279,763	3,560	1,154	2,406	0.9	1,483	347	1,136	0.5
Red Willow	459,712	3,669	698	2,971	0.6	2,125	403	1,722	0.5
Richardson	353,734	13,450	3,599	9,851	2.8	8,636	2,681	5,955	2.4
Saline	368,307	7,371	1,794	5,577	1.5	6,876	1,890	4,986	1.9
Sarpy	152,422	8,573	1,885	6,688	4.4	14,493	4,764	9,729	9.5
Saunders	481,792	10,524	3,357	7,167	1.5	11,513	3,488	8,025	2.4

(Table 3 continued on next page)

[1/] U.S. Department of Commerce, Bureau of the Census. 1980.

(Table 3 continued)

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Acres				Percent	Acres			Percent
Seward	368,109	5,393	1,106	4,287	1.2	5,139	1,275	3,864	1.4
Sherman	360,640	3,603	1,486	2,117	0.6	19,471	6,594	12,877	5.4
Stanton	275,712	5,712	1,936	3,776	1.4	10,766	2,722	8,044	3.9
Thayer	368,026	5,147	1,527	3,620	1.0	2,427	561	1,866	0.7
Thurston	250,003	14,166	3,156	11,010	4.4	7,462	2,181	5,281	3.0
Valley	363,091	1,549	512	1,037	0.3	4,107	1,408	2,699	1.1
Washington	247,174	13,488	2,814	10,674	4.3	14,764	3,881	10,883	6.0
Wayne	283,622	1,787	302	1,485	0.5	3,836	1,365	2,471	1.4
Webster	368,141	7,023	1,113	5,910	1.6	10,411	3,007	7,404	2.8
York	368,486	1,182	284	898	0.2	4,122	1,598	2,524	1.1
Total	22,333,016	381,896	102,957	278,939	1.2	540,422	159,018	381,404	2.4
				WESTERN UNIT					
Antelope	549,459	12,917	3,028	9,889	1.8	17,253	2,290	14,963	3.1
Arthur	454,752	323	--	323	0.1	54	--	54	--
Banner	478,208	5,507	2,151	3,356	0.7	11,534	852	10,682	2.4
Blaine	457,235	1,399	268	1,131	0.2	3,077	356	2,721	0.7
Box Butte	689,280	84	--	84	--	112	56	56	--
Boyd	340,666	11,762	2,511	9,251	2.7	25,205	5,129	20,076	7.4
Brown	776,864	14,682	4,284	10,398	1.3	20,933	5,280	15,653	2.7
Chase	571,853	416	191	225	--	3,282	319	2,963	0.6
Cherry	3,815,309	17,322	4,724	12,598	0.3	32,993	3,705	29,288	0.9
Cheyenne	765,370	688	--	688	0.1	9,124	544	8,580	1.2
Dawes	894,266	56,465	8,401	48,064	5.4	70,313	16,844	53,469	7.9
Deuel	279,853	282	--	282	0.1	398	168	230	0.1
Dundy	588,941	1,635	93	1,542	0.3	4,590	575	4,015	0.8
Garden	1,075,392	823	75	748	0.1	6,991	660	6,331	0.7
Garfield	365,062	1,963	407	1,556	0.4	5,306	495	4,811	1.5
Grant	495,898	--	--	--	--	--	--	--	--
Hayes	456,518	1,096	176	920	0.2	3,821	869	2,952	0.8
Holt	1,539,731	27,163	6,702	20,461	1.3	68,004	12,882	55,122	4.4
Hooker	461,197	935	154	781	0.2	939	143	796	0.2
Keith	665,037	3,579	24	3,555	0.5	8,438	1,324	7,114	1.3
Keya Paha	491,898	22,449	6,484	15,965	3.2	32,982	9,831	23,151	6.7
Kimball	609,254	441	83	358	0.1	5,752	272	5,480	0.9
Knox	707,494	28,630	7,277	21,353	3.0	50,154	11,693	38,461	7.1
Lincoln	1,616,301	12,199	3,040	9,159	0.6	29,383	4,008	25,375	1.8
Logan	365,523	1,216	335	881	0.2	645	54	591	0.2
Loup	367,392	902	284	618	0.2	3,319	780	2,539	0.9
McPherson	549,984	301	51	250	--	263	28	235	--
Morrill	899,174	6,441	3,695	2,746	0.3	14,490	2,652	11,838	1.6
Perkins	566,150	--	--	--	--	--	--	--	--
Rock	642,106	5,671	1,366	4,305	0.7	8,715	1,183	7,532	1.4
Scotts Bluff	464,115	9,396	4,830	4,566	1.0	20,999	3,052	17,947	4.5
Sheridan	1,569,773	37,128	5,675	31,453	2.0	47,037	7,266	39,771	3.0
Sioux	1,324,518	44,921	8,934	35,987	2.7	38,496	6,464	32,032	2.9
Thomas	456,576	4,980	1,556	3,424	0.7	17,605	1,839	15,766	3.9
Wheeler	367,955	2,695	714	1,981	0.5	9,085	1,599	7,486	2.5
Total	26,719,104	336,411	77,513	258,898	1.0	571,292	103,212	468,080	2.1
All counties	49,052,120	718,307	180,470	537,837	1.1	1,111,714	262,230	849,484	2.3

[1/] U.S. Department of Commerce, Bureau of the Census. 1980.

Table 4.--Area of commercial forest land by ownership class and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Ownership class	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
National Forest	30.8	--	30.8
State	21.8	5.8	16.0
County and municipal	3.8	--	3.8
Indian	8.8	8.8	--
Farmer	381.0	205.7	175.3
Misc. private corporation	12.0	10.5	1.5
Misc. private individual	79.6	48.1	31.5
All owners	537.8	278.9	258.9

Table 5.--Area of commercial forest land by ownership class and forest type, Nebraska, 1983

(In thousand acres)

Ownership class	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
National Forest	30.8	30.8	--	--	--	--	--	--	--
State	21.8	7.7	4.9	--	--	3.4	5.8	--	--
County and municipal	3.8	--	--	--	--	3.8	--	--	--
Indian	8.8	--	--	3.5	--	--	2.8	2.5	--
Farmer	381.0	89.6	27.2	3.7	25.6	104.9	64.6	63.1	2.3
Misc. private corporation	12.0	--	1.5	3.4	3.7	--	3.4	--	--
Misc. private individual	79.6	18.0	8.6	14.1	8.1	9.9	6.2	10.9	3.8
All owners	537.8	146.1	42.2	24.7	37.4	122.0	82.8	76.5	6.1

Table 6.--Area of commercial forest land by ownership class and site class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth/acre/year) 119+	85-119	50-84	20-49
National Forest	30.8	2.7	16.0	9.0	3.1
State	21.8	--	7.7	--	14.1
County and municipal	3.8	--	--	--	3.8
Indian	8.8	--	--	3.5	5.3
Farmer	381.0	9.1	55.6	87.2	229.1
Misc. private corporation	12.0	--	--	3.4	8.6
Misc. private individual	79.6	--	5.9	23.1	50.6
All owners	537.8	11.8	85.2	126.2	314.6

Table 7.--Area of commercial forest land by ownership class and ownership size class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Ownership size class (acres) 1-5	5-10	10-20	20-50	50-100	100-500	500-2,500	2,500-5,000	5,000+
National Forest	30.8	--	--	--	--	--	--	--	--	30.8
State	21.8	--	--	--	--	--	--	--	--	21.8
County and municipal	3.8	--	--	--	--	--	--	--	3.8	--
Indian	8.8	--	--	--	--	--	--	--	--	8.8
Farmer	381.0	32.3	35.6	100.0	83.0	52.9	48.6	28.6	--	--
Misc. private corporation	12.0	--	--	--	7.1	--	4.9	--	--	--
Misc. private individual	79.6	12.7	6.2	13.6	9.2	17.6	16.9	--	3.4	--
All owners	537.8	45.0	41.8	113.6	99.3	70.5	70.4	28.6	7.2	61.4

Table 8.--Area of commercial forest land by ownership class, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Ownership class	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
National Forest	30.8	27.7	--	3.1	--
State	21.8	18.4	--	3.4	--
County and municipal	3.8	3.8	--	--	--
Indian	8.8	--	6.0	2.8	--
Farmer	381.0	261.0	57.5	60.2	2.3
Misc. private corporation	12.0	8.6	3.4	--	--
Misc. private individual	79.6	50.4	22.0	3.4	3.8
All owners	537.8	369.9	88.9	72.9	6.1
EASTERN UNIT					
National Forest	--	--	--	--	--
State	5.8	5.8	--	--	--
County and municipal	--	--	--	--	--
Indian	8.8	--	6.0	2.8	--
Farmer	205.7	128.7	28.4	48.6	--
Misc. private corporation	10.5	7.1	3.4	--	--
Misc. private individual	48.1	27.6	13.3	3.4	3.8
All owners	278.9	169.2	51.1	54.8	3.8
WESTERN UNIT					
National Forest	30.8	27.7	--	3.1	--
State	16.0	12.6	--	3.4	--
County and municipal	3.8	3.8	--	--	--
Indian	--	--	--	--	--
Farmer	175.3	132.3	29.1	11.6	2.3
Misc. private corporation	1.5	1.5	--	--	--
Misc. private individual	31.5	22.8	8.7	--	--
All owners	258.9	200.7	37.8	18.1	2.3

Table 9.--Area of commercial forest land by ownership class and area-condition class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Area-condition class			
		70	60	50	40 or better
National Forest	30.8	5.9	17.7	7.2	--
State	21.8	6.3	12.6	2.9	--
County and municipal	3.8	3.8	--	--	--
Indian	8.8	5.3	3.5	--	--
Farmer	381.0	149.1	185.3	46.6	--
Misc. private corporation	12.0	3.7	4.9	3.4	--
Misc. private individual	79.6	33.3	37.0	9.3	--
All owners	537.8	207.4	261.0	69.4	--

Table 10.--Area of commercial forest land by ownership class and stand-volume class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1/] per acre)		
		Less than 1,500	1,500 to 5,000	5,000+
National Forest	30.8	5.9	13.0	11.9
State	21.8	3.4	7.8	10.6
County and municipal	3.8	3.8	--	--
Indian	8.8	8.8	--	--
Farmer	381.0	146.2	181.4	53.4
Misc. private corporation	12.0	8.6	3.4	--
Misc. private individual	79.6	43.3	36.3	--
All owners	537.8	220.0	241.9	75.9

[1/] International 1/4-inch rule.

Table 11.--Area of commercial forest land by county and forest type, Nebraska, 1983

(In acres)

EASTERN UNIT

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Adams	2,285	--	68	250	346	966	341	306	8
Boone	2,567	--	4	323	306	1,145	214	571	4
Buffalo	6,765	--	641	26	263	1,872	2,337	1,470	156
Burt	4,856	--	77	655	775	1,404	745	1,192	8
Butler	3,560	--	144	557	194	1,294	682	637	52
Cass	12,390	--	673	941	1,001	4,789	2,041	2,812	133
Cedar	5,793	--	74	192	1,104	1,805	328	2,274	16
Clay	1,678	--	40	303	211	611	360	149	4
Colfax	3,507	--	82	625	115	1,134	746	723	82
Cuming	5,473	--	362	574	416	2,108	1,027	950	36
Custer	13,016	--	357	724	647	5,151	1,680	4,273	184
Dakota	5,954	--	164	442	1,251	1,990	694	1,365	48
Dawson	6,171	--	453	260	138	975	1,982	2,264	99
Dixon	7,845	--	43	246	1,872	2,437	240	2,996	11
Dodge	6,046	--	544	73	316	2,428	1,334	1,244	107
Douglas	6,833	--	31	982	1,520	1,977	771	1,533	19
Fillmore	742	--	34	28	37	313	83	235	12
Franklin	3,487	--	70	378	476	1,362	393	796	12
Frontier	1,430	--	20	172	200	632	155	243	8
Furnas	3,329	--	282	146	161	1,081	791	811	57
Gage	7,716	--	30	900	1,250	2,933	632	1,963	8
Gosper	477	--	16	45	16	163	84	137	16
Greeley	323	--	12	--	12	115	36	136	12
Hall	3,698	--	396	--	153	1,062	1,419	617	51
Hamilton	1,960	--	94	225	53	595	530	427	36
Harlan	2,934	--	89	445	89	976	623	623	89
Hitchcock	2,768	--	50	460	313	1,084	430	415	16
Howard	3,943	--	125	510	125	1,327	783	948	125
Jefferson	10,775	--	318	865	895	4,385	1,173	3,043	96
Johnson	7,373	--	305	731	490	2,966	1,387	1,397	97
Kearney	152	--	8	--	8	56	24	48	8
Lancaster	4,837	--	249	585	293	2,005	861	777	67
Madison	2,294	--	66	355	66	762	482	497	66
Merrick	4,596	--	414	196	197	1,006	1,605	1,125	53
Nance	7,673	--	411	826	414	2,779	1,502	1,576	165
Nemaha	8,363	--	216	1,345	282	2,739	1,724	1,841	216
Nuckolls	4,094	--	361	233	253	1,443	983	770	51
Otoe	8,714	--	326	1,618	502	2,960	1,904	1,312	92
Pawnee	6,851	--	570	194	382	2,553	1,533	1,498	121
Phelps	461	--	22	--	153	143	33	110	--
Pierce	1,931	--	82	--	82	697	246	742	82
Platte	3,805	--	269	315	342	1,494	738	606	41
Polk	2,406	--	166	140	69	823	515	672	21
Red Willow	2,971	--	235	198	185	1,149	615	538	51
Richardson	9,851	--	291	1,530	291	3,267	2,097	2,084	291
Saline	5,577	--	325	597	380	2,111	988	1,093	83
Sarpy	6,688	--	91	416	1,753	1,877	552	1,972	27

(Table 11 continued on next page)

(Table 11 continued)

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Saunders	7,167	--	638	151	339	2,218	2,086	1,568	167
Seward	4,287	--	167	613	258	1,703	823	672	51
Sherman	2,117	--	138	173	97	633	601	435	40
Stanton	3,776	--	205	--	118	1,799	639	960	55
Thayer	3,620	--	151	270	151	1,268	676	953	151
Thurston	11,010	--	392	904	423	2,564	2,043	4,559	125
Valley	1,037	--	43	45	43	367	165	331	43
Washington	10,674	--	114	1,014	3,299	3,001	926	2,308	12
Wayne	1,485	--	--	303	303	396	234	249	--
Webster	5,910	--	304	560	429	2,373	913	1,259	72
York	898	--	62	28	59	356	149	216	28
Total	278,939	--	11,914	24,687	25,916	95,622	49,698	67,321	3,781
				WESTERN UNIT					
Antelope	9,889	1,039	2,251	--	1,268	2,283	2,561	487	--
Arthur	323	--	54	--	--	108	161	--	--
Banner	3,356	3,149	--	--	--	--	--	--	207
Blaine	1,131	60	336	--	188	101	399	47	--
Box Butte	84	--	--	--	--	28	56	--	--
Boyd	9,251	2,309	1,750	--	607	1,577	2,443	565	--
Brown	10,398	3,609	2,322	--	993	901	1,459	1,114	--
Chase	225	--	59	--	--	54	112	--	--
Cherry	12,598	5,606	1,592	--	1,027	1,434	2,125	759	55
Cheyenne	688	--	--	--	--	688	--	--	--
Dawes	48,064	45,270	454	--	43	1,059	1,155	--	83
Deuel	282	--	62	--	--	53	167	--	--
Dundy	1,542	75	335	--	63	399	616	54	--
Garden	748	275	184	--	--	54	235	--	--
Garfield	1,556	450	313	--	144	165	427	57	--
Grant	--	--	--	--	--	--	--	--	--
Hayes	920	320	83	--	20	181	279	37	--
Holt	20,461	4,289	4,275	--	1,915	4,191	4,257	1,534	--
Hooker	781	105	180	--	84	120	172	120	--
Keith	3,555	--	735	--	21	1,323	1,476	--	--
Keya Paha	15,965	6,367	2,940	--	1,623	1,697	2,230	1,108	--
Kimball	358	358	--	--	--	--	--	--	--
Knox	21,353	4,010	5,892	--	2,110	2,813	4,675	1,853	--
Lincoln	9,159	500	2,261	--	--	3,140	2,758	500	--
Logan	881	235	254	--	81	84	67	160	--
Loup	618	30	146	--	83	91	231	37	--
McPherson	250	75	42	--	21	28	56	28	--
Morrill	2,746	--	506	--	--	470	940	--	830
Perkins	--	--	--	--	--	--	--	--	--
Rock	4,305	1,019	976	--	494	593	843	380	--
Scotts Bluff	4,566	--	824	--	--	1,438	1,192	--	1,112
Sheridan	31,453	29,929	262	--	124	407	667	64	--
Sioux	35,987	34,063	361	--	188	703	456	216	--
Thomas	3,424	2,769	217	--	103	63	182	63	27
Wheeler	1,981	175	593	--	293	181	702	37	--
Total	258,898	146,086	30,259	--	11,493	26,427	33,099	9,220	2,314
All units	537,837	146,086	42,173	24,687	37,409	122,049	82,797	76,541	6,095

Table 12.--Area of commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	146.1	--	--	3.1	3.1	9.8	6.5	20.1	18.3	14.1	28.6	22.9	10.5	9.1
Eastern redcedar-hardwood	42.2	3.4	--	3.3	2.3	--	7.4	3.8	7.3	9.9	1.5	3.3	--	--
Oak-hickory	24.7	--	3.4	--	3.5	10.6	7.2	--	--	--	--	--	--	--
Bur oak	37.4	--	--	--	4.9	3.7	2.6	6.5	6.5	3.3	6.2	3.7	--	--
Elm-ash-cottonwood	122.0	20.2	6.0	7.5	6.6	12.8	6.8	17.1	15.5	16.8	7.2	2.6	2.9	--
Cottonwood	82.8	--	7.7	8.4	--	6.1	9.6	22.8	16.9	2.9	8.4	--	--	--
Lowland plains hardwoods	76.5	10.0	18.3	--	9.0	5.4	11.6	5.9	2.9	6.8	3.7	--	2.9	--
Nonstocked	6.1	--	--	--	--	2.3	--	--	3.8	--	--	--	--	--
All types	537.8	33.6	35.4	22.3	29.4	50.7	51.7	76.2	71.2	53.8	55.6	32.5	16.3	9.1

Table 13.--Area of commercial forest land by forest type, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Ponderosa pine	146.1	129.7	13.3	3.1	--
Eastern redcedar-hardwood	42.2	24.5	11.0	6.7	--
Oak-hickory	24.7	7.2	14.1	3.4	--
Bur oak	37.4	22.3	15.1	--	--
Elm-ash-cottonwood	122.0	85.8	12.5	23.7	--
Cottonwood	82.8	69.0	6.1	7.7	--
Lowland plains hardwoods	76.5	31.4	16.8	28.3	--
Nonstocked	6.1	--	--	--	6.1
All types	537.8	369.9	88.9	72.9	6.1
EASTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	11.9	5.8	6.1	--	--
Oak-hickory	24.7	7.2	14.1	3.4	--
Bur oak	25.9	15.7	10.2	--	--
Elm-ash-cottonwood	95.6	66.1	9.2	20.3	--
Cottonwood	49.7	46.9	--	2.8	--
Lowland plains hardwoods	67.3	27.5	11.5	28.3	--
Nonstocked	3.8	--	--	--	3.8
All types	278.9	169.2	51.1	54.8	3.8
WESTERN UNIT					
Ponderosa pine	146.1	129.7	13.3	3.1	--
Eastern redcedar-hardwood	30.3	18.7	4.9	6.7	--
Oak-hickory	--	--	--	--	--
Bur oak	11.5	6.6	4.9	--	--
Elm-ash-cottonwood	26.4	19.7	3.3	3.4	--
Cottonwood	33.1	22.1	6.1	4.9	--
Lowland plains hardwoods	9.2	3.9	5.3	--	--
Nonstocked	2.3	--	--	--	2.3
All types	258.9	200.7	37.8	18.1	2.3

Table 14.--Area of commercial forest land by forest type, stand-size class, and site class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth/acre/year)			
		120+	85-119	50-84	20-49
Ponderosa pine					
Sawtimber	129.7	11.8	69.8	37.4	10.7
Poletimber	13.3	--	3.1	4.0	6.2
Sapling & seedling	3.1	--	--	3.1	--
All stands	146.1	11.8	72.9	44.5	16.9
Eastern redcedar-hardwood					
Sawtimber	24.5	--	--	--	24.5
Poletimber	11.0	--	--	--	11.0
Sapling & seedling	6.7	--	--	3.3	3.4
All stands	42.2	--	--	3.3	38.9
Oak-hickory					
Sawtimber	7.2	--	--	7.2	--
Poletimber	14.1	--	--	14.1	--
Sapling & seedling	3.4	--	--	--	3.4
All stands	24.7	--	--	21.3	3.4
Bur oak					
Sawtimber	22.3	--	--	3.3	19.0
Poletimber	15.1	--	4.9	--	10.2
Sapling & seedling	--	--	--	--	--
All stands	37.4	--	4.9	3.3	29.2
Elm-ash-cottonwood					
Sawtimber	85.8	--	3.7	13.2	68.9
Poletimber	12.5	--	--	3.7	8.8
Sapling & seedling	23.7	--	--	--	23.7
All stands	122.0	--	3.7	16.9	101.4
Cottonwood					
Sawtimber	69.0	--	--	11.4	57.6
Poletimber	6.1	--	--	--	6.1
Sapling & seedling	7.7	--	--	--	7.7
All stands	82.8	--	--	11.4	71.4
Lowland plains hardwoods					
Sawtimber	31.4	--	3.7	11.7	16.0
Poletimber	16.8	--	--	6.4	10.4
Sapling & seedling	28.3	--	--	7.4	20.9
All stands	76.5	--	3.7	25.5	47.3
Nonstocked	6.1	--	--	--	6.1
All types					
Sawtimber	369.9	11.8	77.2	84.2	196.7
Poletimber	88.9	--	8.0	28.2	52.7
Sapling & seedling	72.9	--	--	13.8	59.1
Nonstocked	6.1	--	--	--	6.1
All stands	537.8	11.8	85.2	126.2	314.6

Table 15.--Area of commercial forest land by forest type, stand-size class, and stocking percent, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Stocking percent of growing-stock trees				
		Less than 16.7	16.7-60	61-100	101-133	134+
Ponderosa pine						
Sawtimber	129.7	--	36.8	72.9	20.0	--
Poletimber	13.3	--	7.1	6.2	--	--
Sapling & seedling	3.1	--	--	--	3.1	--
All stands	146.1	--	43.9	79.1	23.1	--
Eastern redcedar-hardwood						
Sawtimber	24.5	--	10.2	14.3	--	--
Poletimber	11.0	--	7.2	3.8	--	--
Sapling & seedling	6.7	--	6.7	--	--	--
All stands	42.2	--	24.1	18.1	--	--
Oak-hickory						
Sawtimber	7.2	--	--	3.7	3.5	--
Poletimber	14.1	--	--	10.7	3.4	--
Sapling & seedling	3.4	--	3.4	--	--	--
All stands	24.7	--	3.4	14.4	6.9	--
Bur oak						
Sawtimber	22.3	--	12.5	9.8	--	--
Poletimber	15.1	--	--	15.1	--	--
Sapling & seedling	--	--	--	--	--	--
All stands	37.4	--	12.5	24.9	--	--
Elm-ash-cottonwood						
Sawtimber	85.8	--	47.7	28.6	9.5	--
Poletimber	12.5	--	5.9	6.6	--	--
Sapling & seedling	23.7	--	17.4	3.4	2.9	--
All stands	122.0	--	71.0	38.6	12.4	--
Cottonwood						
Sawtimber	69.0	--	12.7	38.1	12.4	5.8
Poletimber	6.1	--	3.7	2.4	--	--
Sapling & seedling	7.7	--	2.8	4.9	--	--
All stands	82.8	--	19.2	45.4	12.4	5.8
Lowland plains hardwoods						
Sawtimber	31.4	--	7.6	22.2	1.6	--
Poletimber	16.8	--	10.0	6.8	--	--
Sapling & seedling	28.3	--	15.6	12.7	--	--
All stands	76.5	--	33.2	41.7	1.6	--
Nonstocked	6.1	6.1	--	--	--	--
All types						
Sawtimber	369.9	--	127.5	189.6	47.0	5.8
Poletimber	88.9	--	33.9	51.6	3.4	--
Sapling & seedling	72.9	--	45.9	21.0	6.0	--
Nonstocked	6.1	6.1	--	--	--	--
All stands	537.8	6.1	207.3	262.2	56.4	5.8

Table 16.--Area of commercial forest land by forest type, site-index class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
ALL UNITS									
Ponderosa pine	146.1	--	3.1	28.8	29.5	64.5	14.4	5.8	--
Eastern redcedar-hardwood	42.2	10.2	11.8	6.7	10.2	3.3	--	--	--
Oak-hickory	24.7	--	--	--	10.3	14.4	--	--	--
Bur oak	37.4	--	15.5	7.2	6.5	--	8.2	--	--
Elm-ash-cottonwood	122.0	--	22.3	40.1	28.0	13.9	14.0	--	3.7
Cottonwood	82.8	--	14.6	20.3	24.1	18.6	5.2	--	--
Lowland plains hardwoods	76.5	--	11.5	19.0	16.8	14.0	15.2	--	--
Nonstocked	6.1	--	2.3	3.8	--	--	--	--	--
All types	537.8	10.2	81.1	125.9	125.4	128.7	57.0	5.8	3.7
EASTERN UNIT									
Ponderosa pine	--	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	11.9	3.8	2.9	--	5.2	--	--	--	--
Oak-hickory	24.7	--	--	--	10.3	14.4	--	--	--
Bur oak	25.9	--	15.5	3.9	6.5	--	--	--	--
Elm-ash-cottonwood	95.6	--	11.8	32.8	19.4	13.9	14.0	--	3.7
Cottonwood	49.7	--	7.3	15.4	15.5	6.3	5.2	--	--
Lowland plains hardwoods	67.3	--	11.5	13.7	13.5	14.0	14.6	--	--
Nonstocked	3.8	--	--	3.8	--	--	--	--	--
All types	278.9	3.8	49.0	69.6	70.4	48.6	33.8	--	3.7
WESTERN UNIT									
Ponderosa pine	146.1	--	3.1	28.8	29.5	64.5	14.4	5.8	--
Eastern redcedar-hardwood	30.3	6.4	8.9	6.7	5.0	3.3	--	--	--
Oak-hickory	--	--	--	--	--	--	--	--	--
Bur oak	11.5	--	--	3.3	--	--	8.2	--	--
Elm-ash-cottonwood	26.4	--	10.5	7.3	8.6	--	--	--	--
Cottonwood	33.1	--	7.3	4.9	8.6	12.3	--	--	--
Lowland plains hardwoods	9.2	--	--	5.3	3.3	--	0.6	--	--
Nonstocked	2.3	--	2.3	--	--	--	--	--	--
All types	258.9	6.4	32.1	56.3	55.0	80.1	23.2	5.8	--

Table 17.--Area of commercial forest land by forest type and basal-area class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151+
Ponderosa pine	146.1	--	5.0	6.2	2.8	3.1	26.6	27.6	19.5	23.4	4.0	24.6	3.3	--
Eastern redcedar-hardwood	42.2	--	1.5	3.4	--	8.2	6.9	8.7	5.6	7.9	--	--	--	--
Oak-hickory	24.7	--	--	--	--	3.4	--	--	7.1	7.0	7.2	--	--	--
Bur oak	37.4	--	--	--	--	3.3	3.7	12.7	7.5	10.2	--	--	--	--
Elm-ash-cottonwood	122.0	3.4	6.8	3.8	13.5	20.1	8.8	5.8	13.5	10.8	6.3	15.4	13.8	--
Cottonwood	82.8	--	2.8	--	2.9	--	17.0	3.8	12.0	10.5	7.3	15.8	4.9	5.8
Lowland plains hardwoods	76.5	--	4.8	3.4	3.8	13.8	10.1	12.7	1.6	2.5	3.4	18.8	1.0	0.6
Nonstocked	6.1	--	2.3	--	--	3.8	--	--	--	--	--	--	--	--
All types	537.8	3.4	23.2	16.8	23.0	55.7	73.1	71.3	66.8	72.3	28.2	74.6	23.0	6.4

Table 18.--Area of commercial forest land by forest type and distance to road[1/], Nebraska, 1983

(In thousand acres)

Forest type	All distances	Distance to road (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Ponderosa pine	146.1	17.7	17.1	91.5	19.8	--	--	--	--
Eastern redcedar-hardwood	42.2	7.9	13.8	15.7	4.8	--	--	--	--
Oak-hickory	24.7	10.3	7.3	7.1	--	--	--	--	--
Bur oak	37.4	--	5.5	23.3	3.7	4.9	--	--	--
Elm-ash-cottonwood	122.0	33.5	39.2	45.9	3.4	--	--	--	--
Cottonwood	82.8	13.3	11.0	44.3	14.2	--	--	--	--
Lowland plains hardwoods	76.5	34.8	13.6	28.1	--	--	--	--	--
Nonstocked	6.1	--	--	6.1	--	--	--	--	--
All types	537.8	117.5	107.5	262.0	45.9	4.9	--	--	--

[1/] A permanent road that is maintained at least once a year.

Table 19.--Area of commercial forest land by forest type and distance to water[1/], Nebraska, 1983

(In thousand acres)

Forest type	All distances	Distance to water (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Ponderosa pine	146.1	3.8	3.8	7.7	10.5	3.4	3.1	--	113.8
Eastern redcedar-hardwood	42.2	3.3	5.2	9.8	10.0	5.0	--	8.9	--
Oak-hickory	24.7	--	--	10.4	7.2	--	7.1	--	--
Bur oak	37.4	--	8.2	7.6	8.9	7.2	5.5	--	--
Elm-ash-cottonwood	122.0	22.1	10.3	22.6	15.2	18.1	9.7	6.3	17.7
Cottonwood	82.8	34.5	17.7	11.1	6.0	--	--	6.2	7.3
Lowland plains hardwoods	76.5	3.4	10.2	15.7	24.6	7.1	--	15.5	--
Nonstocked	6.1	--	3.8	2.3	--	--	--	--	--
All types	537.8	67.1	59.2	87.2	82.4	40.8	25.4	36.9	138.8

[1/] Lakes or ponds 5 acres or larger in area, and streams or rivers at least 66 feet in width

Table 20.--Area of commercial forest land by forest type and stand-area class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-area class (acres)								
		1-4	5-9	10-19	20-39	40-79	80-159	160-319	320-639	640+
Ponderosa pine	146.1	88.1	27.0	31.0	--	--	--	--	--	--
Eastern redcedar-hardwood	42.2	10.4	15.5	3.3	--	--	8.1	4.9	--	--
Oak-hickory	24.7	--	3.4	10.5	--	3.8	3.5	--	--	3.5
Bur oak	37.4	4.9	7.0	14.0	7.6	--	3.9	--	--	--
Elm-ash-cottonwood	122.0	36.6	51.1	24.8	2.9	2.9	3.7	--	--	--
Cottonwood	82.8	20.9	12.2	5.2	10.0	8.9	13.6	6.1	5.9	--
Lowland plains hardwoods	76.5	20.9	8.1	40.2	3.8	--	--	2.5	--	1.0
Nonstocked	6.1	--	--	6.1	--	--	--	--	--	--
All types	537.8	181.8	124.3	135.1	24.3	15.6	32.8	13.5	5.9	4.5

Table 21.--Area of commercial forest land by stocking class based on selected stand components, Nebraska, 1983

(In thousand acres)

Stocking percentage	Stocking classified in terms of		
	All live trees	Growing-stock trees	Rough and rotten trees
0-10	--	--	198.3
11-20	--	6.1	124.7
21-30	2.3	19.4	82.0
31-40	20.4	56.0	64.5
41-50	10.8	59.1	39.6
51-60	50.6	66.8	20.7
61-70	47.5	68.8	5.5
71-80	58.4	69.1	--
81-90	65.1	75.2	2.5
91-100	81.1	47.9	--
101-110	77.1	31.3	--
111-120	72.8	21.0	--
121-130	26.2	11.3	--
131-140	17.1	--	--
141-150	5.5	5.8	--
151-160	2.9	--	--
161+	--	--	--
Total	537.8	537.8	537.8

Table 22.--Area of commercial forest land by forest type, physiographic class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and physiographic class	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Xeric	14.7	--	--	--	--	14.7	--	--
Xeromesic	111.5	30.8	--	--	--	65.8	--	14.9
Mesic	19.9	--	7.7	--	--	9.1	--	3.1
Hydromesic	--	--	--	--	--	--	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	146.1	30.8	7.7	--	--	89.6	--	18.0
Eastern redcedar-hardwood								
Xeric	8.2	--	--	--	--	8.2	--	--
Xeromesic	10.7	--	--	--	--	6.7	1.5	2.5
Mesic	12.3	--	--	--	--	12.3	--	--
Hydromesic	11.0	--	4.9	--	--	--	--	6.1
Hydric	--	--	--	--	--	--	--	--
All classes	42.2	--	4.9	--	--	27.2	1.5	8.6
Oak-hickory								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	24.7	--	--	--	3.5	3.7	3.4	14.1
Hydromesic	--	--	--	--	--	--	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	24.7	--	--	--	3.5	3.7	3.4	14.1
Bur oak								
Xeric	4.9	--	--	--	--	4.9	--	--
Xeromesic	10.1	--	--	--	--	7.2	--	2.9
Mesic	18.5	--	--	--	--	9.6	3.7	5.2
Hydromesic	3.9	--	--	--	--	3.9	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	37.4	--	--	--	--	25.6	3.7	8.1
Elm-ash-cottonwood								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	3.4	--	--	--	--	3.4	--	--
Mesic	60.3	--	3.4	--	--	56.9	--	--
Hydromesic	54.9	--	--	3.8	--	41.2	--	9.9
Hydric	3.4	--	--	--	--	3.4	--	--
All classes	122.0	--	3.4	3.8	--	104.9	--	9.9
Cottonwood								
Xeric	3.8	--	--	--	--	3.8	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	32.4	--	2.9	--	--	25.7	--	3.8
Hydromesic	43.2	--	2.9	--	2.8	35.1	--	2.4
Hydric	3.4	--	--	--	--	--	3.4	--
All classes	82.8	--	5.8	--	2.8	64.6	3.4	6.2
Lowland plains hardwoods								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	8.3	--	--	--	--	3.4	--	4.9
Mesic	60.0	--	--	--	2.5	51.5	--	6.0
Hydromesic	8.2	--	--	--	--	8.2	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	76.5	--	--	--	2.5	63.1	--	10.9
Nonstocked								
Xeric	2.3	--	--	--	--	2.3	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--
Hydromesic	3.8	--	--	--	--	--	--	3.8
Hydric	--	--	--	--	--	--	--	--
All classes	6.1	--	--	--	--	2.3	--	3.8
All types								
Xeric	33.9	--	--	--	--	33.9	--	--
Xeromesic	144.0	30.8	--	--	--	86.5	1.5	25.2
Mesic	228.1	--	14.0	--	6.0	168.8	7.1	32.2
Hydromesic	125.0	--	7.8	3.8	2.8	88.4	--	22.2
Hydric	6.8	--	--	--	--	3.4	3.4	--
All classes	537.8	30.8	21.8	3.8	8.8	381.0	12.0	79.6

Table 23.--Area of noncommercial forest land by ownership class, Nebraska, 1983

(In thousand acres)

Ownership class	Total	Unproductive	Productive-reserved
National Forest	3.1	3.1	--
Miscellaneous federal	5.1	3.8	1.3
State	28.3	11.8	16.5
County and municipal	0.4	--	0.4
Indian	3.5	3.5	--
Farmer	104.7	104.7	--
Misc. private corporation	8.4	8.4	--
Misc. private individual	27.0	27.0	--
All owners	180.5	162.3	18.2

Table 24.--Area of noncommercial forest land by forest type and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	Total	Unproductive	Productive-reserved
ALL UNITS			
Ponderosa pine	29.5	24.7	4.8
Eastern redcedar-hardwood	32.7	30.4	2.3
Oak-hickory	3.3	3.3	--
Bur oak	25.8	25.8	--
Elm-ash-cottonwood	31.6	28.7	2.9
Cottonwood	46.8	38.6	8.2
Lowland plains hardwoods	10.8	10.8	--
Nonstocked	--	--	--
All types	180.5	162.3	18.2
EASTERN UNIT			
Ponderosa pine	--	--	--
Eastern redcedar-hardwood	22.3	22.3	--
Oak-hickory	--	--	--
Bur oak	3.5	3.5	--
Elm-ash-cottonwood	26.7	24.6	2.1
Cottonwood	39.7	31.5	8.2
Lowland plains hardwoods	10.8	10.8	--
Nonstocked	--	--	--
All types	103.0	92.7	10.3
WESTERN UNIT			
Ponderosa pine	29.5	24.7	4.8
Eastern redcedar-hardwood	10.4	8.1	2.3
Oak-hickory	3.3	3.3	--
Bur oak	22.3	22.3	--
Elm-ash-cottonwood	4.9	4.1	0.8
Cottonwood	7.1	7.1	--
Lowland plains hardwoods	--	--	--
Nonstocked	--	--	--
All types	77.5	69.6	7.9

Table 25.--Area of nonforest land with trees by land use, forest type, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Land use	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
ALL UNITS									
Cropland	41.8	--	--	3.5	--	34.9	3.4	--	--
Improved pasture	582.5	161.3	79.4	6.8	13.9	215.0	78.7	10.2	17.2
Wooded strips	262.2	25.3	13.2	10.2	20.5	113.9	68.9	10.2	--
Marsh	7.8	--	--	--	--	7.8	--	--	--
Windbreaks	139.1	--	21.3	6.9	--	82.1	25.3	3.5	--
Wooded pasture	78.3	6.2	--	3.8	16.0	10.5	18.9	5.3	17.6
All uses	1,111.7	192.8	113.9	31.2	50.4	464.2	195.2	29.2	34.8
EASTERN UNIT									
Cropland	31.5	--	--	--	--	31.5	--	--	--
Improved pasture	221.6	--	38.7	3.4	--	135.2	34.1	10.2	--
Wooded strips	159.0	--	9.8	3.4	6.8	89.2	43.0	6.8	--
Marsh	2.3	--	--	--	--	2.3	--	--	--
Windbreaks	90.8	--	12.8	6.9	--	57.6	13.5	--	--
Wooded pasture	35.2	--	--	3.8	9.3	10.5	2.9	2.9	5.8
All uses	540.4	--	61.3	17.5	16.1	326.3	93.5	19.9	5.8
WESTERN UNIT									
Cropland	10.3	--	--	3.5	--	3.4	3.4	--	--
Improved pasture	360.9	161.3	40.7	3.4	13.9	79.8	44.6	--	17.2
Wooded strips	103.2	25.3	3.4	6.8	13.7	24.7	25.9	3.4	--
Marsh	5.5	--	--	--	--	5.5	--	--	--
Windbreaks	48.3	--	8.5	--	--	24.5	11.8	3.5	--
Wooded pasture	43.1	6.2	--	--	6.7	--	16.0	2.4	11.8
All uses	571.3	192.8	52.6	13.7	34.3	137.9	101.7	9.3	29.0

Table 26.--Area of nonforest land with trees by forest type and stand-size class, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Ponderosa pine	192.8	93.4	72.8	26.6	--
Eastern redcedar-hardwood	113.9	6.6	45.7	61.6	--
Oak-hickory	31.2	6.9	13.7	10.6	--
Bur oak	50.4	20.2	24.2	6.0	--
Elm-ash-cottonwood	464.2	149.6	240.8	73.8	--
Cottonwood	195.2	121.7	63.3	10.2	--
Lowland plains hardwoods	29.2	13.6	10.3	5.3	--
Nonstocked	34.8	--	--	--	34.8
All types	1,111.7	412.0	470.8	194.1	34.8

Table 27.--Area of windbreaks by forest type, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	21.3	--	12.9	8.4	--
Oak-hickory	6.9	3.4	3.5	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	82.1	23.6	44.6	13.9	--
Cottonwood	25.3	18.5	6.8	--	--
Lowland plains hardwoods	3.5	--	3.5	--	--
Nonstocked	--	--	--	--	--
All types	139.1	45.5	71.3	22.3	--
EASTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	12.8	--	9.4	3.4	--
Oak-hickory	6.9	3.4	3.5	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	57.6	20.2	30.6	6.8	--
Cottonwood	13.5	10.1	3.4	--	--
Lowland plains hardwoods	--	--	--	--	--
Nonstocked	--	--	--	--	--
All types	90.8	33.7	46.9	10.2	--
WESTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	8.5	--	3.5	5.0	--
Oak-hickory	--	--	--	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	24.5	3.4	14.0	7.1	--
Cottonwood	11.8	8.4	3.4	--	--
Lowland plains hardwoods	3.5	--	3.5	--	--
Nonstocked	--	--	--	--	--
All types	48.3	11.8	24.4	12.1	--

Table 28.--Area of wooded strips by forest type, stand-size class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Sawtimber	15.3	--	--	--	--	15.3	--	--
Poletimber	10.0	3.6	--	--	--	6.4	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	25.3	3.6	--	--	--	21.7	--	--
Eastern redcedar-hardwood								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	13.2	--	--	--	--	13.2	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	13.2	--	--	--	--	13.2	--	--
Oak-hickory								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	6.8	--	--	--	--	6.8	--	--
Sapling & seedling	3.4	--	--	--	--	--	--	3.4
All stands	10.2	--	--	--	--	6.8	--	3.4
Bur oak								
Sawtimber	6.8	--	3.4	--	--	3.4	--	--
Poletimber	13.7	--	--	--	--	13.7	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	20.5	--	3.4	--	--	17.1	--	--
Elm-ash-cottonwood								
Sawtimber	34.4	--	--	--	--	34.4	--	--
Poletimber	69.2	--	--	--	--	69.2	--	--
Sapling & seedling	10.3	--	--	--	--	10.3	--	--
All stands	113.9	--	--	--	--	113.9	--	--
Cottonwood								
Sawtimber	33.2	--	--	--	--	30.3	--	2.9
Poletimber	32.3	--	--	--	--	28.8	--	3.5
Sapling & seedling	3.4	--	--	--	--	3.4	--	--
All stands	68.9	--	--	--	--	62.5	--	6.4
Lowland plains hardwoods								
Sawtimber	3.4	--	--	--	--	3.4	--	--
Poletimber	6.8	--	--	--	--	3.4	--	3.4
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	10.2	--	--	--	--	6.8	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All types								
Sawtimber	93.1	--	3.4	--	--	86.8	--	2.9
Poletimber	152.0	3.6	--	--	--	141.5	--	6.9
Sapling & seedling	17.1	--	--	--	--	13.7	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All stands	262.2	3.6	3.4	--	--	242.0	--	13.2

Table 29.--Area of wooded strips by forest type and site-index class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Ponderosa pine	25.3	--	--	--	2.7	17.4	5.2	--	--
Eastern redcedar-hardwood	13.2	--	13.2	--	--	--	--	--	--
Oak-hickory	10.2	--	--	--	3.4	6.8	--	--	--
Bur oak	20.5	--	3.4	3.4	13.7	--	--	--	--
Elm-ash-cottonwood	113.9	--	3.4	30.8	58.5	7.6	13.6	--	--
Cottonwood	68.9	--	--	13.6	27.6	24.8	2.9	--	--
Lowland plains hardwoods	10.2	--	--	--	--	3.4	6.8	--	--
Nonstocked	--	--	--	--	--	--	--	--	--
All types	262.2	--	20.0	47.8	105.9	60.0	28.5	--	--

Table 30.--Area of wooded strips by forest type, basal-area class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)										
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101+
ALL UNITS												
Ponderosa pine	25.3	--	6.3	4.1	--	5.2	3.6	6.1	--	--	--	--
Eastern redcedar-hardwood	13.2	--	6.8	--	3.5	--	2.9	--	--	--	--	--
Oak-hickory	10.2	--	6.8	--	--	3.4	--	--	--	--	--	--
Bur oak	20.5	6.8	--	10.3	--	--	3.4	--	--	--	--	--
Elm-ash-cottonwood	113.9	17.1	24.2	17.3	9.5	14.4	14.4	3.4	6.8	3.4	3.4	--
Cottonwood	68.9	17.0	25.6	6.8	7.1	--	6.1	--	3.4	--	--	2.9
Lowland plains hardwoods	10.2	--	3.4	3.4	--	--	--	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	262.2	40.9	73.1	41.9	20.1	23.0	30.4	9.5	10.2	6.8	3.4	2.9
EASTERN UNIT												
Ponderosa pine	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	9.8	--	3.4	--	3.5	--	2.9	--	--	--	--	--
Oak-hickory	3.4	--	3.4	--	--	--	--	--	--	--	--	--
Bur oak	6.8	--	--	3.4	--	--	3.4	--	--	--	--	--
Elm-ash-cottonwood	89.2	13.6	20.8	10.2	6.0	14.4	7.2	3.4	6.8	3.4	3.4	--
Cottonwood	43.0	13.6	10.2	3.4	3.4	--	6.1	--	3.4	--	--	2.9
Lowland plains hardwoods	6.8	--	3.4	--	--	--	--	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	159.0	27.2	41.2	17.0	12.9	14.4	19.6	3.4	10.2	6.8	3.4	2.9
WESTERN UNIT												
Ponderosa pine	25.3	--	6.3	4.1	--	5.2	3.6	6.1	--	--	--	--
Eastern redcedar-hardwood	3.4	--	3.4	--	--	--	--	--	--	--	--	--
Oak-hickory	6.8	--	3.4	--	--	3.4	--	--	--	--	--	--
Bur oak	13.7	6.8	--	6.9	--	--	--	--	--	--	--	--
Elm-ash-cottonwood	24.7	3.5	3.4	7.1	3.5	--	7.2	--	--	--	--	--
Cottonwood	25.9	3.4	15.4	3.4	3.7	--	--	--	--	--	--	--
Lowland plains hardwoods	3.4	--	--	3.4	--	--	--	--	--	--	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	103.2	13.7	31.9	24.9	7.2	8.6	10.8	6.1	--	--	--	--

Table 31.--Area of wooded strips by forest type and stand-age class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-age class (years) 21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101+
Ponderosa pine	25.3	--	--	--	--	10.0	--	--	11.2	4.1
Eastern redcedar-hardwood	13.2	--	3.4	--	3.5	--	2.9	3.4	--	--
Oak-hickory	10.2	--	3.4	6.8	--	--	--	--	--	--
Bur oak	20.5	--	--	--	--	3.4	13.7	--	--	3.4
Elm-ash-cottonwood	113.9	10.3	17.5	34.6	12.8	14.1	3.4	13.6	7.6	--
Cottonwood	68.9	--	--	13.6	13.7	21.5	16.7	3.4	--	--
Lowland plains hardwoods	10.2	--	3.4	--	3.4	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--
All types	262.2	10.3	27.7	55.0	33.4	49.0	36.7	23.8	18.8	7.5

Table 32.--Area of wooded strips by forest type, stand-size class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Ownership class National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Sawtimber	15.3	--	--	--	--	15.3	--	--
Poletimber	10.0	3.6	--	--	--	6.4	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	25.3	3.6	--	--	--	21.7	--	--
Eastern redcedar-hardwood								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	13.2	--	--	--	--	13.2	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	13.2	--	--	--	--	13.2	--	--
Oak-hickory								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	6.8	--	--	--	--	6.8	--	--
Sapling & seedling	3.4	--	--	--	--	--	--	3.4
All stands	10.2	--	--	--	--	6.8	--	3.4
Bur oak								
Sawtimber	6.8	--	3.4	--	--	3.4	--	--
Poletimber	13.7	--	--	--	--	13.7	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	20.5	--	3.4	--	--	17.1	--	--
Elm-ash-cottonwood								
Sawtimber	34.4	--	--	--	--	34.4	--	--
Poletimber	69.2	--	--	--	--	69.2	--	--
Sapling & seedling	10.3	--	--	--	--	10.3	--	--
All stands	113.9	--	--	--	--	113.9	--	--
Cottonwood								
Sawtimber	33.2	--	--	--	--	30.3	--	2.9
Poletimber	32.3	--	--	--	--	28.8	--	3.5
Sapling & seedling	3.4	--	--	--	--	3.4	--	--
All stands	68.9	--	--	--	--	62.5	--	6.4
Lowland plains hardwoods								
Sawtimber	3.4	--	--	--	--	3.4	--	--
Poletimber	6.8	--	--	--	--	3.4	--	3.4
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	10.2	--	--	--	--	6.8	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All types								
Sawtimber	93.1	--	3.4	--	--	86.8	--	2.9
Poletimber	152.0	3.6	--	--	--	141.5	--	6.9
Sapling & seedling	17.1	--	--	--	--	13.7	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All stands	262.2	3.6	3.4	--	--	242.0	--	13.2

Table 33.--Area of wooded strips in private ownership by ownership class, owner tenure, and size of holding, Nebraska, 1983

(In thousand acres)

Ownership class and owner tenure	All sizes	Size of holding (acres) 1-5	5-10	10-20	20-50	50+
ALL UNITS						
Farmer						
1-4 years	214.2	63.9	79.0	54.3	17.0	--
5-9 years	--	--	--	--	--	--
10-19 years	3.5	--	--	--	3.5	--
20+ years	24.3	7.2	5.3	--	11.8	--
Total	242.0	71.1	84.3	54.3	32.3	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	9.8	--	6.4	3.4	--	--
5-9 years	--	--	--	--	--	--
10-19 years	3.4	--	--	3.4	--	--
20+ years	--	--	--	--	--	--
Total	13.2	--	6.4	6.8	--	--
All owners						
1-4 years	224.0	63.9	85.4	57.7	17.0	--
5-9 years	--	--	--	--	--	--
10-19 years	6.9	--	--	3.4	3.5	--
20+ years	24.3	7.2	5.3	--	11.8	--
Total	255.2	71.1	90.7	61.1	32.3	--
EASTERN UNIT						
Farmer						
1-4 years	139.8	41.1	64.5	24.0	10.2	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	9.4	3.4	2.6	--	3.4	--
Total	149.2	44.5	67.1	24.0	13.6	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	9.8	--	6.4	3.4	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	9.8	--	6.4	3.4	--	--
All owners						
1-4 years	149.6	41.1	70.9	27.4	10.2	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	9.4	3.4	2.6	--	3.4	--
Total	159.0	44.5	73.5	27.4	13.6	--

(Table 33 continued on next page)

(Table 33 continued)

WESTERN UNIT

Ownership class and owner tenure	All sizes	Size of holding (acres) 1-5	5-10	10-20	20-50	50+
Farmer						
1-4 years	74.4	22.8	14.5	30.3	6.8	--
5-9 years	--	--	--	--	--	--
10-19 years	3.5	--	--	--	3.5	--
20+ years	14.9	3.8	2.7	--	8.4	--
Total	92.8	26.6	17.2	30.3	18.7	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	3.4	--	--	3.4	--	--
20+ years	--	--	--	--	--	--
Total	3.4	--	--	3.4	--	--
All owners						
1-4 years	74.4	22.8	14.5	30.3	6.8	--
5-9 years	--	--	--	--	--	--
10-19 years	6.9	--	--	3.4	3.5	--
20+ years	14.9	3.8	2.7	--	8.4	--
Total	96.2	26.6	17.2	33.7	18.7	--

Table 34.--Number of all live trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Ponderosa pine	38,729	13,053	8,083	5,980	4,117	2,651	2,058	1,304	698	500	175	59	51	--	--
Eastern redcedar	20,274	11,809	4,533	2,209	1,210	316	144	37	--	16	--	--	--	--	--
Rocky mountain juniper	149	--	--	--	96	29	24	--	--	--	--	--	--	--	--
Total	59,152	24,862	12,616	8,189	5,423	2,996	2,226	1,341	698	516	175	59	51	--	--
Hardwoods															
White oak	15,475	2,675	5,271	2,759	1,528	1,315	768	464	317	105	134	58	59	22	--
Red oak	1,194	341	341	52	89	136	109	77	26	5	6	4	6	2	--
Hickory	4,505	2,046	1,385	562	324	127	42	15	--	--	--	4	--	--	--
Basswood	3,289	2,557	--	134	117	105	133	123	50	29	25	10	4	--	2
Soft maple	2,315	682	341	323	463	320	68	78	24	--	6	--	10	--	--
Boxelder	9,031	5,054	1,087	678	539	734	381	236	175	80	35	16	16	--	--
Elm	19,357	9,523	5,977	2,222	859	467	167	70	49	9	6	4	--	4	--
Green ash	16,905	9,519	1,860	2,432	1,210	599	550	328	184	81	48	25	49	20	--
Cottonwood	10,725	2,717	1,421	1,545	636	837	540	820	596	499	326	229	353	156	50
Black willow	2,438	245	580	270	423	507	190	55	58	60	21	16	13	--	--
Hackberry	10,241	5,216	2,097	1,142	847	339	312	103	49	62	25	15	30	4	--
Black walnut	2,634	1,121	377	351	322	228	142	23	37	23	6	4	--	--	--
Other hardwoods	11,277	5,338	2,963	1,729	552	257	191	104	57	46	18	5	17	--	--
Noncommercial species	7,393	6,446	375	312	11	92	80	28	11	7	26	5	--	--	--
Total	116,779	53,480	24,075	14,511	7,920	6,063	3,673	2,524	1,633	1,006	682	395	557	208	52
All species	175,931	78,342	36,691	22,700	13,343	9,059	5,899	3,865	2,331	1,522	857	454	608	208	52

Table 35.--Number of growing-stock trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Ponderosa pine	32,421	11,849	6,305	4,204	3,309	2,221	1,836	1,270	680	489	152	59	47	--	--
Eastern redcedar	18,722	11,658	3,847	1,905	942	235	109	10	--	16	--	--	--	--	--
Total	51,143	23,507	10,152	6,109	4,251	2,456	1,945	1,280	680	505	152	59	47	--	--
Hardwoods															
White oak	10,395	2,675	3,336	1,373	878	873	480	373	208	40	77	38	26	18	--
Red oak	1,100	341	341	52	47	136	94	53	16	5	6	4	3	2	--
Hickory	4,292	2,046	1,385	419	324	76	23	15	--	--	--	4	--	--	--
Basswood	3,031	2,557	--	70	69	69	93	104	34	15	10	4	4	--	2
Soft maple	1,932	682	341	323	318	138	68	42	8	--	6	--	6	--	--
Boxelder	2,879	1,826	375	145	131	224	81	45	28	13	11	--	--	--	--
Elm	16,744	9,188	5,003	1,414	572	359	122	58	13	9	--	4	--	2	--
Green ash	14,148	9,519	1,368	1,149	794	318	424	241	151	66	44	20	49	5	--
Cottonwood	8,945	1,967	1,046	1,545	595	599	414	728	568	456	308	219	333	132	35
Black willow	2,081	245	580	126	350	458	176	33	43	33	12	16	9	--	--
Hackberry	9,789	5,216	2,097	1,031	693	317	191	103	36	54	18	15	14	4	--
Black walnut	2,409	1,121	377	295	315	180	77	--	19	15	6	4	--	--	--
Other hardwoods	8,109	4,963	1,832	812	150	194	70	27	40	7	6	--	8	--	--
Total	85,854	42,346	18,081	8,754	5,236	3,941	2,313	1,822	1,164	713	504	328	452	163	37
All species	136,997	65,853	28,233	14,863	9,487	6,397	4,258	3,102	1,844	1,218	656	387	499	163	37

Table 36.--Number of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	367	171	148	24	18	6	--	--	--	--	--
Eastern redcedar	93	45	35	13	--	--	--	--	--	--	--
Total	460	216	183	37	18	6	--	--	--	--	--
Hardwoods											
White oak	309	--	132	72	52	14	23	11	5	--	--
Red oak	37	--	15	12	10	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	26	--	24	--	--	2	--	--	--	--	--
Soft maple	48	--	--	36	8	--	--	--	4	--	--
Boxelder	94	--	49	--	29	8	8	--	--	--	--
Elm	50	--	19	12	17	--	--	--	--	2	--
Green ash	176	--	85	49	27	15	--	--	--	--	--
Cottonwood	215	--	63	68	--	24	18	7	14	16	5
Black willow	35	--	14	--	15	6	--	--	--	--	--
Hackberry	106	--	74	--	13	--	7	--	12	--	--
Black walnut	41	--	31	--	10	--	--	--	--	--	--
Other hardwoods	58	--	34	13	--	8	--	--	3	--	--
Total	1,195	--	540	262	181	77	56	18	38	18	5
All species	1,655	216	723	299	199	83	56	18	38	18	5

Table 37.--Net volume of growing stock on commercial forest land by species group, Nebraska, 1955 and 1983[1/]

(In thousand cubic feet)

Species group	Growing stock 1955	1983
Softwoods		
Ponderosa pine	79,800	160,316
Eastern redcedar	3,800	9,940
Jack pine	1,000	--
Total	84,600	170,256
Hardwoods		
White oak	31,900	39,400
Red oak	3,400	5,167
Hickory	1,400	4,135
Basswood	5,800	5,992
Soft maple	1,700	5,381
Boxelder	1,600	5,294
Elm	51,300	12,413
Green ash	27,800	25,900
Cottonwood	140,100	142,218
Black willow	6,400	11,060
Hackberry	6,500	16,516
Black walnut	3,400	5,131
Other hardwoods	4,300	7,148
Total	285,600	285,755
All species	370,200	456,011

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1983 areas because of changes in survey definitions and procedures.

Table 38.--Net volume of all live trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Ponderosa pine	172,362	15,009	19,942	23,317	29,511	29,613	21,561	19,080	7,713	3,359	3,257	--	--
Eastern redcedar	12,271	3,839	4,559	2,091	1,249	250	--	283	--	--	--	--	--
Rocky mountain juniper	698	--	386	162	150	--	--	--	--	--	--	--	--
Total	185,331	18,848	24,887	25,570	30,910	29,863	21,561	19,363	7,713	3,359	3,257	--	--
Hardwoods													
White oak	63,269	10,205	8,459	8,876	7,436	6,629	5,982	2,425	4,248	2,690	3,508	2,811	--
Red oak	6,131	253	395	1,167	1,415	1,340	541	176	274	169	209	192	--
Hickory	4,622	1,272	1,639	946	326	278	--	--	--	161	--	--	--
Basswood	7,731	202	436	736	1,640	1,930	915	656	606	341	155	--	114
Soft maple	8,148	730	2,059	2,213	788	1,076	419	--	303	--	560	--	--
Boxelder	17,903	2,010	2,188	4,313	2,676	2,080	1,800	1,288	1,015	246	287	--	--
Elm	17,769	5,512	3,585	3,613	1,915	1,183	956	323	94	181	--	407	--
Green ash	34,448	5,366	4,121	2,853	4,291	3,973	3,026	2,252	1,848	1,065	4,207	1,446	--
Cottonwood	148,967	3,380	2,338	4,951	4,784	10,769	10,929	12,598	11,631	11,056	28,583	27,531	20,417
Black willow	12,546	667	1,662	3,043	2,036	620	1,226	1,170	542	1,060	520	--	--
Hackberry	19,807	2,592	3,310	2,174	2,742	1,344	826	1,828	954	1,171	2,107	759	--
Black walnut	6,521	706	1,230	1,388	1,419	110	600	611	318	139	--	--	--
Other hardwoods	15,771	4,852	2,705	1,824	1,831	1,032	1,152	719	521	91	1,044	--	--
Noncommercial species	3,372	1,084	55	460	694	225	188	101	462	103	--	--	--
Total	367,005	38,831	34,182	38,557	33,993	32,589	28,560	24,147	22,816	18,473	41,180	33,146	20,531
All species	552,336	57,679	59,069	64,127	64,903	62,452	50,121	43,510	30,529	21,832	44,437	33,146	20,531

Table 39.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Nebraska, 1983

(In thousand cubic feet)

Class of timber	All species	Softwoods	Hardwoods
LIVE TREES			
Growing-stock trees			
Sawtimber			
Saw log portion	291,381	131,017	160,364
Upper stem portion	61,667	5,053	56,614
Subtotal	353,048	136,070	216,978
Poletimber	102,963	34,186	68,777
Total growing stock	456,011	170,256	285,755
Cull trees			
Rough and rotten cull trees			
Sawtimber	24,498	2,841	21,657
Poletimber	52,342	9,549	42,793
Subtotal	76,840	12,390	64,450
Short-log trees	19,485	2,685	16,800
Total cull	96,325	15,075	81,250
TOTAL LIVE TREES	552,336	185,331	367,005
SALVABLE DEAD TREES	9,295	1,316	7,979
ALL CLASSES	561,631	186,647	374,984

Table 40.--Net volume of growing stock, sawtimber, short-log, and rough and rotten trees on commercial forest land by individual species, Nebraska, 1983

Species	Total all live	Growing stock	Short-log cull	Rough and rotten cull	Total all live	Sawtimber	Short-log
	Thousand cubic feet				Thousand board feet[1/]		
Softwoods							
Ponderosa pine	172,362	160,316	2,198	9,848	807,240	781,654	25,586
Eastern redcedar	12,271	9,940	487	1,844	23,278	18,000	5,278
Rocky mountain juniper	698	--	--	698	--	--	--
Total	185,331	170,256	2,685	12,390	830,518	799,654	30,864
Hardwoods							
White oak	2,128	1,967	161	--	9,763	9,054	709
Bur oak	60,567	36,859	4,496	19,212	127,033	112,770	14,263
Chinkapin oak	461	461	--	--	--	--	--
Post oak	113	113	--	--	565	565	--
Northern red oak	5,097	4,596	205	296	16,309	15,614	695
Black oak	1,034	571	350	113	2,135	953	1,182
Shagbark hickory	2,929	2,629	--	300	652	652	--
Bitternut hickory	1,693	1,506	--	187	2,711	2,711	--
American basswood	7,731	5,992	321	1,418	26,914	25,795	1,119
Red maple	239	131	108	--	258	--	258
Silver maple	7,909	5,250	540	2,119	13,021	11,301	1,720
American elm	13,575	9,768	503	3,304	15,584	14,178	1,406
Siberian elm	1,476	725	136	615	798	365	433
Slippery elm	2,416	1,802	--	614	2,849	2,849	--
Rock elm	302	118	--	184	--	--	--
Black ash	307	195	--	112	--	--	--
Green ash	34,141	25,705	1,731	6,705	94,704	89,308	5,396
Eastern cottonwood	148,967	142,218	4,112	2,637	520,930	510,947	9,983
Black willow	12,546	11,060	424	1,062	32,783	31,457	1,326
Hackberry	19,807	16,516	1,404	1,887	48,578	44,675	3,903
Paper birch	577	577	--	--	1,058	1,058	--
Black walnut	6,521	5,131	263	1,127	11,850	11,030	820
Boxelder	17,903	5,294	1,271	11,338	16,763	12,823	3,940
Texas buckeye	1,240	882	89	269	826	545	281
Northern catalpa	225	--	--	225	--	--	--
Honeylocust	2,927	2,155	403	369	8,738	7,495	1,243
Kentucky coffeetree	1,740	1,616	--	124	4,054	4,054	--
Osage-orange	1,249	--	--	1,249	--	--	--
Black locust	91	--	--	91	--	--	--
White mulberry	7,722	1,918	283	5,521	2,833	2,020	813
Total[2/]	363,633	285,755	16,800	61,078	961,709	912,219	49,490
All species	548,964	456,011	19,485	73,468	1,792,227	1,711,873	80,354

[1/] International 1/4-inch rule.

[2/] Does not include noncommercial species. See Table 41 for volumes of noncommercial species.

Table 41.--Net volume of noncommercial species (nongrowing-stock volume) on commercial forest land by individual species, Nebraska, 1983

(In thousand cubic feet)

Species	Nongrowing-stock (rough tree) volume
Peachleaf willow	158
Diamond willow	2,075
Eastern hophornbeam	1,139
All species	3,372

Table 42.--Net volume of growing stock on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1983

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	160,316	--	160,316
Eastern redcedar	9,940	6,172	3,768
Total	170,256	6,172	164,084
Hardwoods			
White oak	39,400	28,691	10,709
Red oak	5,167	5,167	--
Hickory	4,135	4,135	--
Basswood	5,992	5,159	833
Soft maple	5,381	5,381	--
Boxelder	5,294	4,872	422
Elm	12,413	11,317	1,096
Green ash	25,900	19,768	6,132
Cottonwood	142,218	100,334	41,884
Black willow	11,060	7,846	3,214
Hackberry	16,516	15,617	899
Black walnut	5,131	4,917	214
Other hardwoods	7,148	6,372	776
Total	285,755	219,576	66,179
All species	456,011	225,748	230,263

Table 43.--Net volume of sawtimber on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	781,654	--	781,654
Eastern redcedar	18,000	10,044	7,956
Total	799,654	10,044	789,610
Hardwoods			
White oak	122,389	90,110	32,279
Red oak	16,567	16,567	--
Hickory	3,363	3,363	--
Basswood	25,795	22,650	3,145
Soft maple	11,301	11,301	-
Boxelder	12,823	12,823	-
Elm	17,392	16,679	713
Green ash	89,308	73,619	15,689
Cottonwood	510,947	350,427	160,520
Black willow	31,457	23,232	8,225
Hackberry	44,675	42,958	1,717
Black walnut	11,030	10,239	791
Other hardwoods	15,172	14,114	1,058
Total	912,219	688,082	224,137
All species	1,711,873	698,126	1,013,747

[1/] International 1/4-inch rule.

Table 44.--Net volume of growing stock on commercial forest land by county and species group, Nebraska, 1983

(In thousand cubic feet)

EASTERN UNIT

County	All species	Species group													
		Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Adams	1,870	--	39	369	42	25	51	118	202	696	51	31	154	53	39
Boone	1,840	--	11	440	48	29	66	151	211	541	51	48	146	44	54
Buffalo	5,449	--	362	201	29	57	92	160	371	3,369	203	96	298	80	131
Burt	3,627	--	85	992	102	70	55	177	302	1,230	66	75	247	88	138
Butler	3,307	--	62	390	72	65	110	195	255	1,575	140	71	206	79	87
Cass	11,278	--	303	1,288	158	194	332	638	1,130	5,297	434	226	802	198	278
Cedar	3,773	--	97	1,184	82	128	41	227	369	890	49	133	332	72	169
Clay	1,338	--	29	289	40	17	23	59	134	523	30	15	100	50	29
Colfax	2,512	--	33	378	75	37	45	61	245	1,162	101	55	160	86	74
Cuming	5,627	--	168	632	82	125	154	293	425	2,848	214	102	340	85	159
Custer	8,068	--	209	1,384	158	322	120	269	962	3,105	245	306	616	164	208
Dakota	4,775	--	87	1,165	109	74	109	256	465	1,657	137	103	387	86	140
Dawson	3,682	--	295	247	40	25	38	61	184	2,348	98	51	145	68	82
Dixon	4,756	--	101	1,857	110	100	22	307	426	819	31	141	444	113	285
Dodge	5,700	--	241	289	32	107	130	242	457	3,244	244	99	376	87	152
Douglas	5,359	--	57	1,613	166	68	131	364	402	1,570	124	107	407	142	208
Fillmore	619	--	14	60	6	13	17	32	96	264	24	18	52	9	14
Franklin	2,671	--	46	611	61	44	61	149	288	937	71	58	201	56	88
Frontier	1,046	--	12	248	28	18	34	77	68	374	34	23	72	25	33
Furnas	2,999	--	140	186	27	48	72	124	207	1,729	121	52	172	43	78
Gage	5,725	--	46	1,520	153	90	161	385	759	1,561	134	146	489	120	161
Gosper	320	--	6	37	6	7	8	9	29	150	15	10	23	11	9
Greeley	186	--	5	17	3	9	3	6	15	81	9	12	16	5	5
Hall	3,353	--	211	136	13	59	62	106	206	2,112	120	50	170	28	80
Hamilton	1,466	--	49	162	32	33	26	39	121	764	54	32	84	34	36
Harlan	2,095	--	30	251	57	20	40	51	205	1,020	97	46	142	75	61
Hitchcock	2,441	--	24	428	64	35	83	176	255	921	82	47	193	77	56
Howard	2,738	--	42	317	69	37	53	70	263	1,321	129	71	188	96	82
Jefferson	8,662	--	152	1,341	155	200	232	474	1,257	3,234	281	247	734	166	189
Johnson	6,327	--	131	704	111	122	198	409	584	2,870	254	139	473	171	161
Kearney	98	--	2	3	1	--	4	3	9	51	6	3	8	4	4
Lancaster	4,684	--	103	457	80	82	158	304	379	2,272	200	92	320	115	122
Madison	1,633	--	23	206	44	21	31	39	160	785	74	37	108	58	47
Merrick	3,629	--	265	257	35	49	59	115	182	2,222	99	56	157	49	84
Nance	6,834	--	171	635	117	103	204	353	534	3,478	309	142	440	159	189
Nemaha	5,927	--	85	839	168	89	109	147	573	2,764	250	137	388	204	174
Nuckolls	4,195	--	183	289	42	78	125	232	265	2,334	167	77	239	57	107
Otoe	8,306	--	163	1,032	197	134	307	556	590	3,930	334	163	490	204	206
Pawnee	6,347	--	274	400	51	115	170	310	474	3,514	264	129	393	89	164
Phelps	415	--	14	118	7	6	5	22	25	148	9	6	32	5	18
Pierce	1,167	--	30	83	17	37	21	38	99	545	66	55	100	38	38
Platte	4,076	--	114	379	54	81	142	261	283	2,083	175	78	257	61	108
Polk	2,003	--	89	179	21	41	33	54	250	1,043	62	40	128	22	41
Red Willow	3,020	--	105	222	34	55	89	160	218	1,631	131	58	187	49	81
Richardson	7,030	--	101	866	189	74	136	170	688	3,408	324	155	466	249	204
Saline	5,535	--	135	507	88	99	198	366	396	2,773	248	114	355	107	149
Sarpy	4,878	--	107	1,590	121	56	89	339	370	1,283	82	107	407	108	219
Saunders	6,137	--	331	297	47	82	135	238	392	3,635	250	120	351	100	159
Seward	3,989	--	70	436	80	67	148	289	320	1,845	165	81	276	110	102

(Table 44 continued on next page)

(Table 44 continued)

County	All species	Species group: Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Sherman	1,673	--	72	153	24	21	29	49	126	929	63	28	98	34	47
Stanton	2,656	--	93	149	13	52	44	132	394	1,214	93	59	264	92	57
Thayer	2,452	--	46	190	45	11	51	72	231	1,242	135	67	189	90	83
Thurston	8,887	--	218	1,840	125	1,387	112	410	509	3,106	209	121	525	161	164
Valley	670	--	14	51	11	14	13	20	61	327	37	23	54	23	22
Washington	8,247	--	116	2,921	258	106	171	514	582	2,134	156	154	672	171	292
Wayne	1,149	--	10	372	43	14	19	53	91	359	22	16	77	32	41
Webster	5,699	--	128	604	85	96	186	343	612	2,641	232	125	409	98	140
York	803	--	23	47	8	11	24	43	62	426	41	19	58	17	24
Total	225,748	--	6,172	33,858	4,135	5,159	5,381	11,317	19,768	100,334	7,846	4,872	15,617	4,917	6,372
WESTERN UNIT															
Antelope	7,718	1,206	257	1,178	--	35	--	85	630	3,930	241	21	67	11	57
Arthur	352	--	3	8	--	--	--	--	12	282	42	--	5	--	--
Banner	3,050	3,050	--	--	--	--	--	--	--	--	--	--	--	--	--
Blaine	994	74	26	211	--	8	--	5	104	530	15	3	9	1	8
Box Butte	54	--	--	--	--	--	--	2	10	35	7	--	--	--	--
Boyd	6,268	2,143	216	522	--	10	--	102	425	2,477	270	27	40	8	28
Brown	7,273	3,367	284	881	--	210	--	25	355	1,746	87	59	91	42	126
Chase	206	--	5	4	--	--	--	--	6	166	22	--	3	--	--
Cherry	9,903	5,483	265	808	--	16	--	55	356	2,564	207	41	46	13	49
Cheyenne	189	--	--	--	--	--	--	--	42	147	--	--	--	--	--
Dawes	52,487	49,846	29	101	--	4	--	52	149	2,009	260	--	34	--	3
Deuel	159	--	7	--	--	--	--	4	19	116	13	--	--	--	--
Dundy	1,254	64	25	105	--	3	--	19	87	851	81	6	11	--	2
Garden	529	215	19	4	--	--	--	--	5	263	21	--	2	--	--
Garfield	1,316	407	31	145	--	4	--	1	64	600	43	3	11	1	6
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hayes	587	275	13	14	--	--	--	14	39	206	22	3	--	--	1
Holt	14,248	4,324	596	1,632	--	32	--	130	883	5,856	494	69	120	23	89
Hooker	569	106	16	115	--	3	--	--	49	252	7	13	4	--	4
Keith	2,571	--	70	52	--	1	--	104	174	1,956	194	--	19	--	1
Keya Paha	10,957	6,025	430	1,121	--	17	--	64	439	2,465	194	48	51	24	79
Kimball	397	397	--	--	--	--	--	--	--	--	--	--	--	--	--
Knox	15,989	3,957	681	2,178	--	446	--	106	1,059	6,474	435	55	254	82	262
Lincoln	3,915	415	322	126	--	--	--	127	284	2,428	166	6	41	--	--
Logan	515	231	48	85	--	1	--	10	26	90	4	6	9	1	4
Loup	502	37	12	94	--	3	--	5	58	267	16	3	4	--	3
McPherson	200	63	3	33	--	1	--	--	14	79	2	3	1	--	1
Morrill	1,125	109	58	--	--	--	--	45	95	764	54	--	--	--	--
Perkins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rock	3,216	1,063	140	454	--	11	--	34	195	1,179	67	18	28	5	22
Scotts Bluff	1,601	146	92	4	--	--	--	26	70	1,201	60	--	2	--	--
Sheridan	34,562	33,319	22	143	--	4	--	22	133	802	89	8	12	1	7
Sioux	41,945	40,608	47	201	--	6	--	47	127	798	68	21	12	2	8
Thomas	3,739	3,229	17	125	--	4	--	--	52	293	4	6	5	--	4
Wheeler	1,873	157	34	365	--	14	--	12	171	1,058	29	3	18	--	12
Total	230,263	160,316	3,768	10,709	--	833	--	1,096	6,132	41,884	3,214	422	899	214	776
All units	456,011	160,316	9,940	44,567	4,135	5,992	5,381	12,413	25,900	142,218	11,060	5,294	16,516	5,131	7,148

Table 45.--Net volume of sawtimber on commercial forest land by county and species group, Nebraska, 1983

(In thousand board feet)[1/]

EASTERN UNIT

County	All species	Species group													
		Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Adams	5,708	--	58	1,188	30	105	107	146	789	2,354	184	98	429	151	69
Boone	5,478	--	12	1,296	55	137	138	222	900	1,732	226	184	344	122	110
Buffalo	16,956	--	615	833	30	270	228	220	1,246	11,611	501	175	881	73	273
Burt	10,661	--	110	2,762	95	308	77	262	1,222	4,166	218	262	611	206	362
Butler	10,288	--	99	1,344	47	289	228	295	918	5,490	446	179	590	191	172
Cass	35,726	--	448	4,398	172	909	777	865	4,375	18,765	1,297	563	2,202	483	472
Cedar	11,292	--	164	3,343	137	650	90	282	1,513	3,124	162	467	814	116	430
Clay	3,992	--	42	883	11	65	29	69	500	1,758	95	43	283	144	70
Colfax	7,614	--	65	1,110	6	137	44	129	864	4,059	274	127	409	166	224
Cuming	17,959	--	226	2,173	95	577	354	398	1,565	10,272	586	208	994	222	289
Custer	25,652	--	499	4,412	73	1,588	222	374	3,673	10,988	649	888	1,478	260	548
Dakota	14,731	--	120	3,641	98	348	241	358	1,841	5,809	432	310	1,047	181	305
Dawson	10,869	--	533	659	7	108	61	110	591	7,742	255	107	411	90	195
Dixon	13,477	--	94	4,848	230	499	33	382	1,784	2,944	98	534	1,092	164	775
Dodge	18,490	--	368	1,268	57	507	336	281	1,553	11,817	576	134	1,166	158	269
Douglas	15,566	--	32	4,638	169	293	242	536	1,602	5,239	485	386	1,091	338	515
Fillmore	2,013	--	26	209	8	63	41	43	387	946	71	54	122	17	26
Franklin	8,132	--	51	1,775	64	199	122	215	1,187	3,273	230	187	494	134	201
Frontier	3,116	--	17	755	27	83	71	113	251	1,258	128	74	204	65	70
Furnas	9,548	--	226	732	31	226	172	171	708	6,138	315	89	521	78	141
Gage	17,332	--	50	4,519	147	423	330	563	3,263	5,140	561	551	1,118	323	344
Gosper	988	--	16	115	--	31	9	17	93	536	40	23	64	15	29
Greeley	600	--	17	72	--	49	7	8	39	293	24	26	46	3	16
Hall	10,677	--	347	618	27	282	164	128	693	7,384	273	67	528	37	129
Hamilton	4,565	--	90	537	5	148	42	64	421	2,658	141	70	231	65	93
Harlan	6,369	--	62	751	--	64	49	110	696	3,589	258	97	376	126	191
Hitchcock	7,421	--	31	1,383	45	153	168	240	995	3,099	306	149	528	217	107
Howard	8,376	--	100	977	--	147	68	142	869	4,663	342	153	516	149	250
Jefferson	27,636	--	282	4,427	126	971	516	645	5,167	11,330	910	767	1,734	407	354
Johnson	19,692	--	213	2,479	96	575	439	533	2,115	9,991	795	354	1,377	423	302
Kearney	300	--	6	11	--	--	5	6	24	187	16	6	26	2	11
Lancaster	14,673	--	155	1,655	73	375	352	414	1,350	8,003	622	214	953	290	217
Madison	4,978	--	50	622	--	75	36	84	543	2,758	197	82	287	99	145
Merrick	11,070	--	460	867	33	234	131	161	624	7,462	267	124	461	85	161
Nance	21,367	--	277	2,243	80	461	435	532	1,842	12,281	901	310	1,290	314	401
Nemaha	18,021	--	175	2,492	10	337	118	307	1,984	9,691	672	316	1,014	370	535
Nuckolls	13,331	--	293	1,170	63	374	307	314	928	8,212	487	159	735	130	159
Otoe	25,381	--	256	3,491	141	585	632	850	2,184	13,298	1,173	455	1,389	548	379
Pawnee	20,287	--	450	1,627	79	558	422	414	1,666	12,486	718	259	1,176	152	280
Phelps	1,277	--	14	350	14	28	15	25	96	555	19	16	97	7	41
Pierce	3,694	--	91	338	--	192	45	59	260	1,981	167	128	298	21	114
Platte	13,012	--	163	1,471	72	386	340	356	1,007	7,417	528	166	792	157	157
Polk	6,497	--	145	609	13	191	75	72	1,013	3,710	146	97	300	49	77
Red Willow	9,644	--	161	870	41	255	213	219	755	5,847	366	110	567	99	141
Richardson	21,375	--	205	2,590	--	243	158	364	2,347	11,979	857	329	1,242	427	634
Saline	17,456	--	200	1,906	96	468	457	520	1,399	9,796	775	265	1,070	253	251
Sarpy	14,070	--	114	4,461	188	268	188	460	1,517	4,317	321	400	1,085	212	539

(Table 45 continued on next page)

[1/] International 1/4-inch rule.

(Table 45 continued)

County	All species	Species group: Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Saunders	19,235	--	574	1,219	51	392	326	330	1,261	12,691	655	217	1,076	127	316
Seward	12,293	--	104	1,537	70	301	320	399	1,155	6,347	567	209	814	291	179
Sherman	5,175	--	118	490	13	91	58	77	437	3,242	155	53	272	57	112
Stanton	8,482	--	161	587	17	254	113	96	1,454	4,379	216	129	748	216	112
Thayer	7,489	--	104	601	--	39	83	135	712	4,440	352	130	542	101	250
Thurston	27,698	--	382	5,024	47	5,244	190	1,175	1,790	10,735	562	283	1,517	337	412
Valley	2,083	--	39	181	--	55	24	35	176	1,179	96	53	157	22	66
Washington	24,281	--	106	8,732	249	487	344	722	2,299	7,183	608	560	1,893	400	698
Wayne	3,334	--	--	1,053	26	50	20	85	362	1,207	77	59	197	85	113
Webster	18,148	--	188	2,141	90	449	431	486	2,418	9,337	721	331	1,083	241	232
York	2,551	--	40	194	9	54	58	61	196	1,539	113	37	176	23	51
Total	698,126	--	10,044	106,677	3,363	22,650	11,301	16,679	73,619	350,427	23,232	12,823	42,958	10,239	14,114
						WESTERN UNIT									
Antelope	27,919	6,108	328	3,701	--	181	--	79	1,449	15,264	578	--	98	54	79
Arthur	1,222	--	--	40	--	--	--	--	59	1,040	58	--	25	--	--
Banner	14,094	14,094	--	--	--	--	--	--	--	--	--	--	--	--	--
Blaine	3,510	377	19	654	--	40	--	--	253	2,085	73	--	--	3	6
Box Butte	166	--	--	--	--	--	--	--	33	100	33	--	--	--	--
Boyd	24,085	10,681	500	1,535	--	51	--	57	1,217	9,028	861	--	62	37	56
Brown	29,189	16,798	444	2,578	--	700	--	--	920	7,058	224	--	212	118	137
Chase	730	--	14	20	--	--	--	--	29	625	29	--	13	--	--
Cherry	41,639	27,107	423	2,450	--	81	--	34	929	9,885	481	--	87	65	97
Cheyenne	601	--	--	--	--	--	--	--	--	601	--	--	--	--	--
Dawes	248,606	239,628	30	395	--	12	--	69	477	7,437	421	--	137	--	--
Deuel	546	--	29	--	--	--	--	--	63	391	63	--	--	--	--
Dundy	4,437	320	59	339	--	17	--	22	246	3,228	169	--	37	--	--
Garden	2,128	947	72	20	--	--	--	--	29	1,019	28	--	13	--	--
Garfield	5,163	2,014	42	462	--	23	--	--	173	2,345	66	--	24	6	8
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hayes	2,381	1,363	39	38	--	--	--	11	106	716	104	--	--	2	2
Holt	54,227	21,645	1,237	4,904	--	176	--	57	2,158	22,436	1,135	--	197	113	169
Hooker	2,101	535	25	335	--	17	--	--	117	1,033	35	--	--	2	2
Keith	8,879	--	234	223	--	6	--	136	451	7,318	425	--	86	--	--
Keya Paha	45,798	30,055	662	3,384	--	90	--	33	1,161	9,611	437	--	61	121	183
Kimball	1,893	1,893	--	--	--	--	--	--	--	--	--	--	--	--	--
Knox	59,087	19,824	1,271	6,541	--	1,523	--	12	2,676	25,279	925	--	567	220	249
Lincoln	14,087	2,051	1,358	132	--	--	--	33	798	8,910	805	--	--	--	--
Logan	1,976	1,165	152	205	--	6	--	--	51	366	17	--	--	6	8
Loup	1,743	192	10	289	--	17	--	--	149	1,009	73	--	--	2	2
McPherson	781	312	--	98	--	6	--	--	35	321	9	--	--	--	--
Morrill	4,040	463	235	--	--	--	--	45	253	2,787	257	--	--	--	--
Perkins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rock	12,356	5,288	286	1,343	--	57	--	22	462	4,634	175	--	25	26	38
Scotts Bluff	6,092	623	370	20	--	--	--	21	213	4,619	215	--	11	--	--
Sheridan	165,662	161,587	19	452	--	23	--	12	372	2,899	266	--	24	3	5
Sioux	204,763	200,459	64	591	--	23	--	58	295	3,049	177	--	25	9	13
Thomas	17,097	15,344	24	380	--	22	--	--	118	1,188	17	--	--	2	2
Wheeler	6,749	781	10	1,150	--	74	--	12	397	4,239	69	--	13	2	2
Total	1,013,747	781,654	7,956	32,279	--	3,145	--	713	15,689	160,520	8,225	--	1,717	791	1,058
All units	1,711,873	781,654	18,000	138,956	3,363	25,795	11,301	17,392	89,308	510,947	31,457	12,823	44,675	11,030	15,172

Table 46.--Net volume of growing stock on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Ponderosa pine	160,316	10,318	17,131	21,133	27,936	29,346	21,432	18,976	7,470	3,359	3,215	--	--
Eastern redcedar	9,940	3,233	3,504	1,726	1,071	123	--	283	--	--	--	--	--
Total	170,256	13,551	20,635	22,859	29,007	29,469	21,432	19,259	7,470	3,359	3,215	--	--
Hardwoods													
White oak	39,400	4,268	4,600	5,769	4,805	5,540	4,289	1,016	2,716	1,923	1,971	2,503	--
Red oak	5,167	253	282	1,167	1,244	868	362	176	274	169	180	192	--
Hickory	4,135	1,131	1,639	672	254	278	--	--	--	161	--	--	--
Basswood	5,992	135	304	566	1,243	1,793	752	433	341	156	155	--	114
Soft maple	5,381	730	1,287	997	788	631	193	--	303	--	452	--	--
Boxelder	5,294	411	529	1,462	907	663	512	320	490	--	--	--	--
Elm	12,413	2,958	2,519	2,956	1,629	1,047	542	323	--	181	--	258	--
Green ash	25,900	2,016	2,735	1,908	3,441	3,060	2,652	2,027	1,835	953	4,207	1,066	--
Cottonwood	142,218	3,380	2,151	3,831	3,986	9,928	10,762	11,953	11,264	10,836	28,066	26,567	19,494
Black willow	11,060	230	1,402	2,910	1,875	492	1,057	1,015	515	1,060	504	--	--
Hackberry	16,516	2,136	2,676	2,063	1,920	1,344	667	1,681	781	1,171	1,318	759	--
Black walnut	5,131	557	1,197	1,135	937	--	399	449	318	139	--	--	--
Other hardwoods	7,148	1,745	681	1,389	668	449	949	246	322	--	699	--	--
Total	285,755	19,950	22,002	26,825	23,697	26,093	23,136	19,639	19,159	16,749	37,552	31,345	19,608
All species	456,011	33,501	42,637	49,684	52,704	55,562	44,568	38,898	26,629	20,108	40,767	31,345	19,608

Table 47.--Net volume of sawtimber on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	781,654	116,659	156,505	169,470	128,198	117,485	48,139	22,676	22,522	--	--
Eastern redcedar	18,000	9,535	5,992	709	--	1,764	--	--	--	--	--
Total	799,654	126,194	162,497	170,179	128,198	119,249	48,139	22,676	22,522	--	--
Hardwoods											
White oak	122,389	--	26,883	29,262	21,613	4,918	12,717	8,654	8,430	9,912	--
Red oak	16,567	--	6,280	4,535	1,912	850	1,261	677	606	446	--
Hickory	3,363	--	1,315	1,396	--	--	--	652	--	--	--
Basswood	25,795	--	6,560	8,838	3,630	2,121	1,784	830	932	--	1,100
Soft maple	11,301	--	3,791	3,166	983	--	1,454	--	1,907	--	--
Boxelder	12,823	--	3,788	2,912	2,305	1,491	2,327	--	--	--	--
Elm	17,392	--	6,725	4,589	2,477	1,487	--	864	--	1,250	--
Green ash	89,308	--	16,548	15,424	13,521	10,212	8,874	4,424	16,896	3,409	--
Cottonwood	510,947	--	19,205	49,945	54,855	59,963	54,452	49,722	112,077	77,757	32,971
Black willow	31,457	--	9,007	2,489	5,383	5,099	2,483	4,807	2,189	--	--
Hackberry	44,675	--	9,187	6,784	3,404	8,442	3,760	5,373	5,606	2,119	--
Black walnut	11,030	--	4,593	--	2,034	2,266	1,520	617	--	--	--
Other hardwoods	15,172	--	2,794	2,061	4,254	1,153	1,530	--	3,380	--	--
Total	912,219	--	116,676	131,401	116,371	98,002	92,162	76,620	152,023	94,893	34,071
All species	1,711,873	126,194	279,173	301,580	244,569	217,251	140,301	99,296	174,545	94,893	34,071

[1/] International 1/4-inch rule.

Table 48.--Net volume of growing stock on commercial forest land by species group and forest type, Nebraska, 1983

(In thousand cubic feet)

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	160,316	156,470	488	--	1,471	287	--	1,295	305
Eastern redcedar	9,940	--	6,378	--	84	712	1,890	876	--
Total	170,256	156,470	6,866	--	1,555	999	1,890	2,171	305
Hardwoods									
White oak	39,400	260	3,057	6,457	16,504	2,717	--	10,405	--
Red oak	5,167	--	349	3,753	--	340	--	725	--
Hickory	4,135	--	--	2,670	653	161	--	651	--
Basswood	5,992	--	676	1,314	--	118	--	3,884	--
Soft maple	5,381	--	--	--	--	5,237	--	144	--
Boxelder	5,294	--	--	--	--	4,025	--	1,269	--
Elm	12,413	--	155	703	89	8,632	712	2,122	--
Green ash	25,900	--	962	508	1,353	15,953	2,236	4,888	--
Cottonwood	142,218	--	4,477	299	--	36,968	96,407	2,993	1,074
Black willow	11,060	--	127	--	--	7,830	2,857	246	--
Hackberry	16,516	--	87	514	1,203	2,211	249	12,252	--
Black walnut	5,131	--	139	1,138	121	937	--	2,796	--
Other hardwoods	7,148	--	293	246	241	2,362	--	4,006	--
Total	285,755	260	10,322	17,602	20,164	87,491	102,461	46,381	1,074
All species	456,011	156,730	17,188	17,602	21,719	88,490	104,351	48,552	1,379

Table 49.--Net volume of sawtimber on commercial forest land by species group and forest type, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	781,654	761,990	3,030	--	6,042	1,754	--	7,604	1,234
Eastern redcedar	18,000	--	12,339	--	--	1,625	2,705	1,331	--
Total	799,654	761,990	15,369	--	6,042	3,379	2,705	8,935	1,234
Hardwoods									
White oak	122,389	--	14,395	22,227	42,454	12,355	--	30,958	--
Red oak	16,567	--	1,283	11,075	--	1,715	--	2,494	--
Hickory	3,363	--	--	1,396	1,315	652	--	--	--
Basswood	25,795	--	2,841	5,033	--	582	--	17,339	--
Soft maple	11,301	--	--	--	--	11,301	--	--	--
Boxelder	12,823	--	--	--	--	9,891	--	2,932	--
Elm	17,392	--	--	896	365	11,140	812	4,179	--
Green ash	89,308	--	3,367	1,226	3,256	56,467	6,463	18,529	--
Cottonwood	510,947	--	18,698	850	--	118,506	363,057	6,447	3,389
Black willow	31,457	--	--	--	--	22,144	8,237	1,076	--
Hackberry	44,675	--	--	--	3,187	7,277	1,252	32,959	--
Black walnut	11,030	--	617	3,255	596	905	--	5,657	--
Other hardwoods	15,172	--	--	1,153	545	3,999	--	9,475	--
Total	912,219	--	41,201	47,111	51,718	256,934	379,821	132,045	3,389
All species	1,711,873	761,990	56,570	47,111	57,760	260,313	382,526	140,980	4,623

[1/] International 1/4-inch rule.

Table 50.--Net volume of growing stock on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods								
Ponderosa pine	160,316	37,438	13,721	--	--	97,160	--	11,997
Eastern redcedar	9,940	—	2,105	--	--	3,729	470	3,636
Total	170,256	37,438	15,826	--	--	100,889	470	15,633
Hardwoods								
White oak	39,400	--	--	--	1,441	28,721	1,238	8,000
Red oak	5,167	--	--	--	556	1,414	--	3,197
Hickory	4,135	--	--	--	--	1,489	1,161	1,485
Basswood	5,992	--	--	--	860	5,132	--	--
Soft maple	5,381	--	--	--	--	5,381	--	--
Boxelder	5,294	--	--	--	--	5,294	--	--
Elm	12,413	--	--	118	207	11,255	--	833
Green ash	25,900	--	--	1,343	--	20,644	231	3,682
Cottonwood	142,218	--	9,678	--	263	116,011	2,735	13,531
Black willow	11,060	--	--	--	--	7,576	997	2,487
Hackberry	16,516	--	--	--	151	15,009	--	1,356
Black walnut	5,131	--	--	--	--	3,015	--	2,116
Other hardwoods	7,148	--	--	--	--	5,533	241	1,374
Total	285,755	--	9,678	1,461	3,478	226,474	6,603	38,061
All species	456,011	37,438	25,504	1,461	3,478	327,363	7,073	53,694

Table 51.--Net volume of sawtimber on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods								
Ponderosa pine	781,654	173,169	79,275	--	--	475,849	--	53,361
Eastern redcedar	18,000	--	4,011	--	--	5,984	1,932	6,073
Total	799,654	173,169	83,286	--	--	481,833	1,932	59,434
Hardwoods								
White oak	122,389	--	--	--	1,587	95,487	4,762	20,553
Red oak	16,567	—	--	--	1,261	5,492	--	9,814
Hickory	3,363	—	--	--	--	2,048	--	1,315
Basswood	25,795	--	--	--	2,833	22,962	--	--
Soft maple	11,301	—	--	--	--	11,301	--	--
Boxelder	12,823	—	--	--	--	12,823	--	--
Elm	17,392	--	--	--	896	16,131	--	365
Green ash	89,308	--	--	4,410	--	71,487	84	13,327
Cottonwood	510,947	--	46,308	--	--	404,406	10,391	49,842
Black willow	31,457	--	--	--	--	26,757	2,894	1,806
Hackberry	44,675	--	--	--	--	42,596	--	2,079
Black walnut	11,030	--	--	--	--	3,856	--	7,174
Other hardwoods	15,172	—	--	--	--	11,038	545	3,589
Total	912,219	--	46,308	4,410	6,577	726,384	18,676	109,864
All species	1,711,873	173,169	129,594	4,410	6,577	1,208,217	20,608	169,298

[1/] International 1/4-inch rule.

Table 52.--Net volume of growing stock on commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	156,730	--	--	2,258	2,752	6,781	8,032	19,802	22,192	9,640	29,621	33,341	14,880	7,431
Eastern redcedar-hardwood	17,188	278	--	1,243	1,813	--	1,037	1,780	3,252	6,335	505	945	--	--
Oak-hickory	17,602	--	647	--	2,572	8,098	6,285	--	--	--	--	--	--	--
Bur oak	21,719	--	--	--	4,776	1,836	1,227	3,838	5,919	1,842	1,874	407	--	--
Elm-ash-cottonwood	88,490	6,263	561	4,657	8,413	13,903	5,091	14,346	20,340	6,918	3,974	1,938	2,086	--
Cottonwood	104,351	--	1,758	5,851	--	6,537	7,127	39,722	22,525	6,824	14,007	--	--	--
Lowland plains hardwoods	48,552	3,089	2,415	--	6,485	3,452	7,038	4,493	3,160	8,485	4,528	--	5,407	--
Nonstocked	1,379	--	--	--	--	305	--	--	1,074	--	--	--	--	--
All types	456,011	9,630	5,381	14,009	26,811	40,912	35,837	83,981	78,462	40,044	54,509	36,631	22,373	7,431

Table 53.--Net volume of sawtimber on commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	761,990	--	--	11,944	7,100	21,215	38,880	91,455	90,191	48,326	146,995	182,416	85,188	38,280
Eastern redcedar-hardwood	56,570	770	--	2,950	2,978	--	2,414	4,503	9,345	28,572	1,932	3,106	--	--
Oak-hickory	47,111	--	1,803	--	5,652	15,667	23,989	--	--	--	--	--	--	--
Bur oak	57,760	--	--	--	7,699	4,529	510	8,932	20,056	7,548	7,150	1,336	--	--
Elm-ash-cottonwood	260,313	22,865	1,381	9,032	24,651	37,765	14,117	39,600	67,410	23,041	9,253	5,667	5,531	--
Cottonwood	382,526	--	7,017	16,283	--	26,050	25,878	138,975	95,561	27,000	45,762	--	--	--
Lowland plains hardwoods	140,980	7,162	7,536	--	15,323	6,407	18,649	16,237	13,166	28,596	16,876	--	11,028	--
Nonstocked	4,623	--	--	--	--	1,234	--	--	3,389	--	--	--	--	--
All types	1,711,873	30,797	17,737	40,209	63,403	112,867	124,437	299,702	299,118	163,083	227,968	192,525	101,747	38,280

[1/] International 1/4-inch rule.

Table 54.--Net volume of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1983

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	146,188	--	880	3,170	1,242	811	18,413	24,975	20,524	16,130	7,200	49,161	3,682	--	--
Poletimber	8,284	--	--	--	--	--	2,097	--	1,395	4,792	--	--	--	--	--
Sapling & seedling	2,258	--	--	--	--	--	--	--	--	2,258	--	--	--	--	--
All stands	156,730	--	880	3,170	1,242	811	20,510	24,975	21,919	23,180	7,200	49,161	3,682	--	--
Eastern redcedar-hardwood															
Sawtimber	11,714	--	131	--	--	--	2,364	2,993	945	5,281	--	--	--	--	--
Poletimber	3,953	--	--	--	--	360	--	1,780	1,813	--	--	--	--	--	--
Sapling & seedling	1,521	--	--	278	--	1,243	--	--	--	--	--	--	--	--	--
All stands	17,188	--	131	278	--	1,603	2,364	4,773	2,758	5,281	--	--	--	--	--
Oak-hickory															
Sawtimber	6,285	--	--	--	--	--	--	--	2,803	3,482	--	--	--	--	--
Poletimber	10,670	--	--	--	--	--	--	--	2,429	2,572	5,669	--	--	--	--
Sapling & seedling	647	--	--	--	--	647	--	--	--	--	--	--	--	--	--
All stands	17,602	--	--	--	--	647	--	--	5,232	6,054	5,669	--	--	--	--
Bur oak															
Sawtimber	12,053	--	--	--	--	1,471	407	4,256	--	5,919	--	--	--	--	--
Poletimber	9,666	--	--	--	--	--	--	1,827	6,003	1,836	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	21,719	--	--	--	--	1,471	407	6,083	6,003	7,755	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	75,355	--	--	2,397	950	6,073	3,659	3,051	8,590	8,301	1,595	16,117	24,622	--	--
Poletimber	7,385	--	--	--	373	561	3,940	--	--	--	2,511	--	--	--	--
Sapling & seedling	5,750	308	943	--	287	717	--	--	3,495	--	--	--	--	--	--
All stands	88,490	308	943	2,397	1,610	7,351	7,599	3,051	12,085	8,301	4,106	16,117	24,622	--	--
Cottonwood															
Sawtimber	98,984	--	--	--	1,379	--	6,620	3,100	8,845	14,664	6,363	24,081	10,167	23,765	--
Poletimber	3,609	--	--	--	--	--	3,609	--	--	--	--	--	--	--	--
Sapling & seedling	1,758	--	263	--	--	--	1,495	--	--	--	--	--	--	--	--
All stands	104,351	--	263	--	1,379	--	11,724	3,100	8,845	14,664	6,363	24,081	10,167	23,765	--
Lowland plains hardwoods															
Sawtimber	33,713	--	--	--	--	1,507	2,746	1,518	--	--	3,748	20,807	2,127	1,260	--
Poletimber	9,335	--	--	--	--	1,501	801	2,727	725	643	--	2,938	--	--	--
Sapling & seedling	5,504	--	--	463	413	1,539	299	2,790	--	--	--	--	--	--	--
All stands	48,552	--	--	463	413	4,547	3,846	7,035	725	643	3,748	23,745	2,127	1,260	--
Nonstocked	1,379	--	305	--	--	1,074	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	384,292	--	1,011	5,567	3,571	9,862	34,209	39,893	41,707	53,777	18,906	110,166	40,598	25,025	--
Poletimber	52,902	--	--	--	373	2,422	10,447	6,334	12,365	9,843	8,180	2,938	--	--	--
Sapling & seedling	17,438	308	1,206	741	700	4,146	1,794	2,790	3,495	2,258	--	--	--	--	--
Nonstocked	1,379	--	305	--	--	1,074	--	--	--	--	--	--	--	--	--
All stands	456,011	308	2,522	6,308	4,644	17,504	46,450	49,017	57,567	65,878	27,086	113,104	40,598	25,025	--

Table 55.--Net volume of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1983

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	730,398	--	3,746	18,648	5,888	3,171	94,689	117,696	104,743	80,094	36,913	251,042	13,768	--	--
Poletimber	19,648	--	--	--	--	--	5,389	--	2,705	11,554	--	--	--	--	--
Sapling & seedling	11,944	--	--	--	--	--	--	--	--	11,944	--	--	--	--	--
All stands	761,990	--	3,746	18,648	5,888	3,171	100,078	117,696	107,448	103,592	36,913	251,042	13,768	--	--
Eastern redcedar-hardwood															
Sawtimber	45,369	--	537	--	--	--	7,721	13,977	3,106	20,028	--	--	--	--	--
Poletimber	7,481	--	--	--	--	--	--	4,503	2,978	--	--	--	--	--	--
Sapling & seedling	3,720	--	--	770	--	2,950	--	--	--	--	--	--	--	--	--
All stands	56,570	--	537	770	--	2,950	7,721	18,480	6,084	20,028	--	--	--	--	--
Oak-hickory															
Sawtimber	23,989	--	--	--	--	--	--	--	12,490	11,499	--	--	--	--	--
Poletimber	21,319	--	--	--	--	--	--	--	4,055	5,652	11,612	--	--	--	--
Sapling & seedling	1,803	--	--	--	--	1,803	--	--	--	--	--	--	--	--	--
All stands	47,111	--	--	--	--	1,803	--	--	16,545	17,151	11,612	--	--	--	--
Bur oak															
Sawtimber	42,173	--	--	--	--	6,042	1,336	14,739	--	20,056	--	--	--	--	--
Poletimber	15,587	--	--	--	--	--	--	2,849	8,209	4,529	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	57,760	--	--	--	--	6,042	1,336	17,588	8,209	24,585	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	222,462	--	--	5,850	3,437	25,593	13,100	8,639	26,691	24,739	4,517	41,436	68,460	--	--
Poletimber	15,330	--	--	--	474	1,381	6,286	--	--	--	7,189	--	--	--	--
Sapling & seedling	22,521	812	4,757	--	931	2,746	--	--	13,275	--	--	--	--	--	--
All stands	260,313	812	4,757	5,850	4,842	29,720	19,386	8,639	39,966	24,739	11,706	41,436	68,460	--	--
Cottonwood															
Sawtimber	369,443	--	--	--	6,391	--	27,327	13,575	36,022	53,053	27,857	104,481	28,542	72,195	--
Poletimber	6,066	--	--	--	--	--	6,066	--	--	--	--	--	--	--	--
Sapling & seedling	7,017	--	--	--	--	--	7,017	--	--	--	--	--	--	--	--
All stands	382,526	--	--	--	6,391	--	40,410	13,575	36,022	53,053	27,857	104,481	28,542	72,195	--
Lowland plains hardwoods															
Sawtimber	108,122	--	--	--	--	4,225	7,358	5,623	--	--	13,546	66,734	7,369	3,267	--
Poletimber	18,160	--	--	--	--	2,863	1,127	6,068	339	925	--	6,838	--	--	--
Sapling & seedling	14,698	--	--	1,377	--	6,159	1,513	5,649	--	--	--	--	--	--	--
All stands	140,980	--	--	1,377	--	13,247	9,998	17,340	339	925	13,546	73,572	7,369	3,267	--
Nonstocked	4,623	--	1,234	--	--	3,389	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	1,541,956	--	4,283	24,498	15,716	39,031	151,531	174,249	183,052	209,469	82,833	463,693	118,139	75,462	--
Poletimber	103,591	--	--	--	474	4,244	18,868	13,420	18,286	22,660	18,801	6,838	--	--	--
Sapling & seedling	61,703	812	4,757	2,147	931	13,658	8,530	5,649	13,275	11,944	--	--	--	--	--
Nonstocked	4,623	--	1,234	--	--	3,389	--	--	--	--	--	--	--	--	--
All stands	1,711,873	812	10,274	26,645	17,121	60,322	178,929	193,318	214,613	244,073	101,634	470,531	118,139	75,462	--

[1/] International 1/4-inch rule.

Table 56.--Net volume of sawtimber on commercial forest land by species group and log-grade, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All grades	Log grade 1	2	3	Tie and timber
Softwoods					
Ponderosa pine	781,654	3,844	31,988	745,822	--
Eastern redcedar	18,000	--	--	18,000	--
Total	799,654	3,844	31,988	763,822	--
Hardwoods					
White oak	122,389	3,706	37,872	61,503	19,308
Red oak	16,567	--	2,767	13,800	--
Hickory	3,363	--	1,306	2,057	--
Basswood	25,795	1,677	5,738	18,380	--
Soft maple	11,301	--	--	10,262	1,039
Boxelder	12,823	--	563	8,850	3,410
Elm	17,392	1,859	5,291	5,927	4,315
Green ash	89,308	4,951	26,448	47,826	10,083
Cottonwood	510,947	203,039	157,036	130,074	20,798
Black willow	31,457	2,156	5,306	19,121	4,874
Hackberry	44,675	--	25,666	19,009	--
Black walnut	11,030	195	3,248	7,587	--
Other hardwoods	15,172	--	3,656	10,749	767
Total	912,219	217,583	274,897	355,145	64,594
All species	1,711,873	221,427	306,885	1,118,967	64,594

[1/] International 1/4-inch rule.

Table 57.--Net volume of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	2,198	846	1,002	162	129	59	--	--	--	--	--
Eastern redcedar	487	233	178	76	--	--	--	--	--	--	--
Total	2,685	1,079	1,180	238	129	59	--	--	--	--	--
Hardwoods											
White oak	4,657	--	1,170	844	857	387	725	404	270	--	--
Red oak	555	--	171	205	179	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	321	--	267	--	--	54	--	--	--	--	--
Soft maple	648	--	--	445	95	--	--	--	108	--	--
Boxelder	1,271	--	447	--	387	187	250	--	--	--	--
Elm	639	--	105	136	249	--	--	--	--	149	--
Green ash	1,731	--	577	649	280	225	--	--	--	--	--
Cottonwood	4,112	--	456	794	--	480	367	136	381	867	631
Black willow	424	--	161	--	169	94	--	--	--	--	--
Hackberry	1,404	--	481	--	159	--	173	--	591	--	--
Black walnut	263	--	157	--	106	--	--	--	--	--	--
Other hardwoods	775	--	403	178	--	89	--	--	105	--	--
Total	16,800	--	4,395	3,251	2,481	1,516	1,515	540	1,455	1,016	631
All species	19,485	1,079	5,575	3,489	2,610	1,575	1,515	540	1,455	1,016	631

Table 58.--Net volume of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	25,586	7,524	12,011	2,386	2,337	1,328	--	--	--	--	--
Eastern redcedar	5,278	2,217	1,993	1,068	--	--	--	--	--	--	--
Total	30,864	9,741	14,004	3,454	2,337	1,328	--	--	--	--	--
Hardwoods											
White oak	14,972	--	5,563	3,193	2,620	967	1,530	737	362	--	--
Red oak	1,877	--	571	695	611	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	1,119	--	927	--	--	192	--	--	--	--	--
Soft maple	1,978	--	--	1,416	304	--	--	--	258	--	--
Boxelder	3,940	--	1,385	--	1,234	583	738	--	--	--	--
Elm	1,839	--	318	433	794	--	--	--	--	294	--
Green ash	5,396	--	1,744	2,067	890	695	--	--	--	--	--
Cottonwood	9,983	--	1,405	2,522	--	1,500	1,088	383	986	1,459	640
Black willow	1,326	--	493	--	537	296	--	--	--	--	--
Hackberry	3,903	--	1,446	--	506	--	517	--	1,434	--	--
Black walnut	820	--	480	--	340	--	--	--	--	--	--
Other hardwoods	2,337	--	1,243	566	--	281	--	--	247	--	--
Total	49,490	--	15,575	10,892	7,836	4,514	3,873	1,120	3,287	1,753	640
All species	80,354	9,741	29,579	14,346	10,173	5,842	3,873	1,120	3,287	1,753	640

[1/] International 1/4-inch rule.

Table 59.--Net annual growth of growing stock on commercial forest land by softwoods and hardwoods, Nebraska, 1955 and 1982

(In thousand cubic feet)

Species	1955[1/]	1982
Softwoods	3,400	6,038
Hardwoods	5,100	5,061
All species	8,500	11,099

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1982 volumes because of changes in survey definitions and procedures.

Table 60.--Net annual growth of growing stock on commercial forest land by species group and Forest Survey Unit, Nebraska, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	5,415	--	5,415
Eastern redcedar	623	489	134
Total	6,038	489	5,549
Hardwoods			
White oak	718	494	224
Red oak	70	70	--
Hickory	125	125	--
Basswood	112	96	16
Soft maple	199	199	--
Boxelder	180	168	12
Elm	288	368	-80
Green ash	408	264	144
Cottonwood	1,703	1,278	425
Black willow	137	91	46
Hackberry	665	631	34
Black walnut	135	129	6
Other hardwoods	321	289	32
Total	5,061	4,202	859
All species	11,099	4,691	6,408

Table 61.--Net annual growth of sawtimber on commercial forest land by species group and Forest Survey Unit, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	27,197	--	27,197
Eastern redcedar	502	333	169
Total	27,699	333	27,366
Hardwoods			
White oak	3,543	1,953	1,590
Red oak	96	96	--
Hickory	28	28	--
Basswood	1,015	976	39
Soft maple	386	386	--
Boxelder	369	369	--
Elm	316	769	-453
Green ash	1,095	757	338
Cottonwood	4,690	4,320	370
Black willow	263	61	202
Hackberry	2,571	2,512	59
Black walnut	236	217	19
Other hardwoods	422	383	39
Total	15,030	12,827	2,203
All species	42,729	13,160	29,569

[1/] International 1/4-inch rule.

Table 62.--Net annual growth of growing stock on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Ownership class: National Forest	Misc. federal	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods									
Ponderosa pine	5,415	1,479	--	350	--	--	3,281	--	305
Eastern redcedar	623	--	--	30	--	--	349	9	235
Total	6,038	1,479	--	380	--	--	3,630	9	540
Hardwoods									
White oak	718	--	--	--	--	27	462	19	210
Red oak	70	--	--	--	--	16	29	--	25
Hickory	125	--	--	--	--	--	54	33	38
Basswood	112	--	--	--	--	24	88	--	--
Soft maple	199	--	--	--	--	--	199	--	--
Boxelder	180	--	--	--	--	--	180	--	--
Elm	288	--	--	--	2	-59	334	--	11
Green ash	408	--	--	--	19	-72	394	6	61
Cottonwood	1,703	--	--	158	--	12	1,355	7	171
Black willow	137	--	--	--	--	--	87	-34	84
Hackberry	665	--	--	--	--	6	607	--	52
Black walnut	135	--	--	--	--	--	85	--	50
Other hardwoods	321	--	--	--	--	--	264	5	52
Total	5,061	--	--	158	21	-46	4,138	36	754
All species	11,099	1,479	--	538	21	-46	7,768	45	1,294

Table 63.--Net annual growth of sawtimber on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Ownership class							
		National Forest	Misc. federal	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods									
Ponderosa pine	27,197	5,915	--	4,784	--	--	15,324	--	1,174
Eastern redcedar	502	--	--	103	--	--	178	30	191
Total	27,699	5,915	--	4,887	--	--	15,502	30	1,365
Hardwoods									
White oak	3,543	--	--	--	--	24	1,231	55	2,233
Red oak	96	--	--	--	--	19	107	--	-30
Hickory	28	--	--	--	--	--	22	--	6
Basswood	1,015	--	--	--	--	35	980	--	--
Soft maple	386	--	--	--	--	--	386	--	--
Boxelder	369	--	--	--	--	--	369	--	--
Elm	316	--	--	--	--	-237	547	--	6
Green ash	1,095	--	--	--	64	-367	1,231	2	165
Cottonwood	4,690	--	--	700	--	--	3,173	149	668
Black willow	263	--	--	--	--	--	449	-239	53
Hackberry	2,571	--	--	--	--	--	2,516	--	55
Black walnut	236	--	--	--	--	--	72	--	164
Other hardwoods	422	--	--	--	--	--	308	14	100
Total	15,030	--	--	700	64	-526	11,391	-19	3,420
All species	42,729	5,915	--	5,587	64	-526	26,893	11	4,785

[1/] International 1/4-inch rule.

Table 64.--Net annual growth of growing stock on commercial forest land by species group and forest type, Nebraska, 1982

(In thousand cubic feet)

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	5,415	5,336	5	--	32	3	--	29	10
Eastern redcedar	623	--	439	--	5	98	42	39	--
Total	6,038	5,336	444	--	37	101	42	68	10
Hardwoods									
White oak	718	8	47	110	442	35	--	76	--
Red oak	70	--	4	41	--	7	--	18	--
Hickory	125	--	--	74	13	--	--	38	--
Basswood	112	--	6	35	--	1	--	70	--
Soft maple	199	--	--	--	--	194	--	5	--
Boxelder	180	--	--	--	--	138	--	42	--
Elm	288	--	-90	-40	1	344	32	41	--
Green ash	408	--	18	-58	44	254	53	97	--
Cottonwood	1,703	--	49	8	-237	543	1,321	7	12
Black willow	137	--	5	--	--	146	-16	2	--
Hackberry	665	--	2	23	41	175	7	417	--
Black walnut	135	--	1	28	3	25	--	78	--
Other hardwoods	321	--	14	7	5	139	--	156	--
Total	5,061	8	56	223	312	2,001	1,397	1,047	12
All species	11,099	5,344	500	228	349	2,102	1,439	1,115	22

Table 65.--Net annual growth of sawtimber on commercial forest land by species group and forest type, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	27,197	26,847	34	--	74	23	--	178	41
Eastern redcedar	502	--	292	--	--	58	102	50	--
Total	27,699	26,847	326	--	74	81	102	228	41
Hardwoods									
White oak	3,543	--	185	291	1,468	144	--	1,455	--
Red oak	96	--	7	-11	--	29	--	71	--
Hickory	28	--	--	21	6	1	--	--	--
Basswood	1,015	--	23	84	--	3	--	905	--
Soft maple	386	--	--	--	--	386	--	--	--
Boxelder	369	--	--	--	--	258	--	111	--
Elm	316	--	-467	-237	6	136	812	66	--
Green ash	1,095	--	67	-332	99	809	155	297	--
Cottonwood	4,690	--	190	16	-1,067	1,613	3,895	18	25
Black willow	263	--	--	--	--	353	-95	5	--
Hackberry	2,571	--	--	--	64	194	34	2,279	--
Black walnut	236	--	2	86	15	11	--	122	--
Other hardwoods	422	--	--	33	14	51	--	324	--
Total	15,030	--	7	-49	605	3,988	4,801	5,653	25
All species	42,729	26,847	333	-49	679	4,069	4,903	5,881	66

[1/] International 1/4-inch rule.

Table 66.--Net annual growth of growing stock on commercial forest land by forest type and stand-age class, Nebraska, 1982

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	5,344	--	--	300	436	419	430	694	654	246	604	922	314	325
Eastern redcedar-hardwood	500	8	--	-54	185	--	21	21	179	98	10	32	--	--
Oak-hickory	228	--	19	--	-67	192	84	--	--	--	--	--	--	--
Bur oak	349	--	--	--	153	27	17	201	112	28	-196	7	--	--
Elm-ash-cottonwood	2,102	254	13	105	163	367	44	328	476	138	105	99	10	--
Cottonwood	1,439	--	42	329	--	85	29	422	185	112	235	--	--	--
Lowland plains hardwoods	1,115	60	60	--	233	95	157	46	52	182	136	--	94	--
Nonstocked	22	--	--	--	--	10	--	--	12	--	--	--	--	--
All types	11,099	322	134	680	1,103	1,195	782	1,712	1,670	804	894	1,060	418	325

Table 67.--Net annual growth of sawtimber on commercial forest land by forest type and stand-age class, Nebraska, 1982

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	26,847	--	--	223	204	618	2,387	2,970	5,148	1,201	2,749	6,276	4,512	559
Eastern redcedar-hardwood	333	15	--	-444	114	--	43	34	122	336	30	83	--	--
Oak-hickory	-49	--	43	--	-535	234	209	--	--	--	--	--	--	--
Bur oak	679	--	--	--	204	52	5	83	1,199	93	-981	24	--	--
Elm-ash-cottonwood	4,069	408	19	127	537	931	57	671	995	251	196	-138	15	--
Cottonwood	4,903	--	119	469	--	451	217	1,925	527	460	735	--	--	--
Lowland plains hardwoods	5,881	111	154	--	1,176	153	1,789	1,429	190	428	341	--	110	--
Nonstocked	66	--	--	--	--	41	--	--	25	--	--	--	--	--
All types	42,729	534	335	375	1,700	2,480	4,707	7,112	8,206	2,769	3,070	6,245	4,637	559

[1/] International 1/4-inch rule.

Table 68.--Net annual growth of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1982

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	4,463	--	24	92	32	27	419	1,354	676	600	-48	1,157	130	--	--
Poletimber	581	--	--	--	--	--	48	--	47	486	--	--	--	--	--
Sapling & seedling	300	--	--	--	--	--	--	--	--	300	--	--	--	--	--
All stands	5,344	--	24	92	32	27	467	1,354	723	1,386	-48	1,157	130	--	--
Eastern redcedar-hardwood															
Sawtimber	327	--	1	--	--	--	37	36	32	221	--	--	--	--	--
Poletimber	219	--	--	--	--	13	--	21	185	--	--	--	--	--	--
Sapling & seedling	-46	--	--	8	--	-54	--	--	--	--	--	--	--	--	--
All stands	500	--	1	8	--	-41	37	57	217	221	--	--	--	--	--
Oak-hickory															
Sawtimber	84	--	--	--	--	--	--	--	64	20	--	--	--	--	--
Poletimber	125	--	--	--	--	--	--	--	55	-67	137	--	--	--	--
Sapling & seedling	19	--	--	--	--	19	--	--	--	--	--	--	--	--	--
All stands	228	--	--	--	--	19	--	--	119	-47	137	--	--	--	--
Bur oak															
Sawtimber	119	--	--	--	--	-205	7	205	--	112	--	--	--	--	--
Poletimber	230	--	--	--	--	--	--	33	170	27	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	349	--	--	--	--	-205	7	238	170	139	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	1,803	--	--	36	18	87	129	24	269	243	35	336	626	--	--
Poletimber	186	--	--	--	9	13	93	--	--	--	71	--	--	--	--
Sapling & seedling	113	4	22	--	9	12	--	--	66	--	--	--	--	--	--
All stands	2,102	4	22	36	36	112	222	24	335	243	106	336	626	--	--
Cottonwood															
Sawtimber	1,145	--	--	--	27	--	176	22	216	230	115	117	119	123	--
Poletimber	252	--	--	--	--	--	252	--	--	--	--	--	--	--	--
Sapling & seedling	42	--	12	--	--	--	30	--	--	--	--	--	--	--	--
All stands	1,439	--	12	--	27	--	458	22	216	230	115	117	119	123	--
Lowland plains hardwoods															
Sawtimber	736	--	--	--	--	52	109	-43	--	--	68	485	26	39	--
Poletimber	259	--	--	--	--	31	14	94	1	9	--	110	--	--	--
Sapling & seedling	120	--	--	10	11	39	14	46	--	--	--	--	--	--	--
All stands	1,115	--	--	10	11	122	137	97	1	9	68	595	26	39	--
Nonstocked	22	--	10	--	--	12	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	8,677	--	25	128	77	-39	877	1,598	1,257	1,426	170	2,095	901	162	--
Poletimber	1,852	--	--	--	9	57	407	148	458	455	208	110	--	--	--
Sapling & seedling	548	4	34	18	20	16	44	46	66	300	--	--	--	--	--
Nonstocked	22	--	10	--	--	12	--	--	--	--	--	--	--	--	--
All stands	11,099	4	69	146	106	46	1,328	1,792	1,781	2,181	378	2,205	901	162	--

Table 69.--Net annual growth of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1982

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	26,242	--	100	590	130	87	2,798	5,841	3,498	1,800	-91	11,059	430	--	--
Poletimber	382	--	--	--	--	--	25	--	80	277	--	--	--	--	--
Sapling & seedling	223	--	--	--	--	--	--	--	--	223	--	--	--	--	--
All stands	26,847	--	100	590	130	87	2,823	5,841	3,578	2,300	-91	11,059	430	--	--
Eastern redcedar-hardwood															
Sawtimber	614	--	4	--	--	--	96	165	83	266	--	--	--	--	--
Poletimber	148	--	--	--	--	--	--	34	114	--	--	--	--	--	--
Sapling & seedling	-429	--	--	15	--	-444	--	--	--	--	--	--	--	--	--
All stands	333	--	4	15	--	-444	96	199	197	266	--	--	--	--	--
Oak-hickory															
Sawtimber	209	--	--	--	--	--	--	--	207	2	--	--	--	--	--
Poletimber	-301	--	--	--	--	--	--	--	47	-535	187	--	--	--	--
Sapling & seedling	43	--	--	--	--	43	--	--	--	--	--	--	--	--	--
All stands	-49	--	--	--	--	43	--	--	254	-533	187	--	--	--	--
Bur oak															
Sawtimber	380	--	--	--	--	-993	24	150	--	1,199	--	--	--	--	--
Poletimber	299	--	--	--	--	--	--	38	209	52	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	679	--	--	--	--	-993	24	188	209	1,251	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	3,420	--	--	43	55	310	-12	45	312	566	73	597	1,431	--	--
Poletimber	294	--	--	--	16	19	103	--	--	--	156	--	--	--	--
Sapling & seedling	355	8	114	--	35	24	--	--	174	--	--	--	--	--	--
All stands	4,069	8	114	43	106	353	91	45	486	566	229	597	1,431	--	--
Cottonwood															
Sawtimber	4,642	--	--	--	108	--	653	88	909	1,423	475	390	285	311	--
Poletimber	142	--	--	--	--	--	142	--	--	--	--	--	--	--	--
Sapling & seedling	119	--	--	--	--	--	119	--	--	--	--	--	--	--	--
All stands	4,903	--	--	--	108	--	914	88	909	1,423	475	390	285	311	--
Lowland plains hardwoods															
Sawtimber	4,564	--	--	--	--	864	320	39	--	--	188	2,271	814	68	--
Poletimber	1,052	--	--	--	--	34	14	150	3	9	--	842	--	--	--
Sapling & seedling	265	--	--	28	--	126	67	44	--	--	--	--	--	--	--
All stands	5,881	--	--	28	--	1,024	401	233	3	9	188	3,113	814	68	--
Nonstocked	66	--	41	--	--	25	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	40,071	--	104	633	293	268	3,879	6,328	5,009	5,256	645	14,317	2,960	379	--
Poletimber	2,016	--	--	--	16	53	284	222	453	-197	343	842	--	--	--
Sapling & seedling	576	8	114	43	35	-251	186	44	174	223	--	--	--	--	--
Nonstocked	66	--	41	--	--	25	--	--	--	--	--	--	--	--	--
All stands	42,729	8	259	676	344	95	4,349	6,594	5,636	5,282	988	15,159	2,960	379	--

[1/] International 1/4-inch rule.

Table 70.--Timber removals from growing stock on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	517	--	517
Eastern redcedar	56	34	22
Total	573	34	539
Hardwoods			
White oak	2,233	1,659	574
Red oak	247	247	--
Hickory	165	165	--
Basswood	30	28	2
Soft maple	27	27	--
Boxelder	319	301	18
Elm	281	262	19
Green ash	790	574	216
Cottonwood	3,190	2,904	286
Black willow	401	305	96
Hackberry	449	423	26
Black walnut	166	162	4
Other hardwoods	479	363	116
Total	8,777	7,420	1,357
All species	9,350	7,454	1,896

Table 71.--Timber removals from sawtimber on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	2,376	--	2,376
Eastern redcedar	170	139	31
Total	2,546	139	2,407
Hardwoods			
White oak	6,190	4,618	1,572
Red oak	674	674	--
Hickory	435	435	--
Basswood	93	89	4
Soft maple	101	101	--
Boxelder	1,269	1,269	--
Elm	789	730	59
Green ash	2,161	1,576	585
Cottonwood	17,356	15,962	1,394
Black willow	1,084	823	261
Hackberry	1,217	1,145	72
Black walnut	1,044	1,016	28
Other hardwoods	1,305	989	316
Total	33,718	29,427	4,291
All species	36,264	29,566	6,698

[1/] International 1/4-inch rule.

Table 72.--Timber removals from growing stock and sawtimber on commercial forest land by species group, Nebraska, 1953 and 1982

Species group	Growing stock: 1953[1/]	Growing stock: 1982	Sawtimber: 1953[1/]	Sawtimber: 1982
	Thousand cubic feet		Thousand board feet[2/]	
Softwoods				
Ponderosa pine	63	517	372	2,376
Eastern redcedar	--	56	--	170
Total	63	573	372	2,546
Hardwoods				
Oak	901	2,480	3,960	6,864
Soft maple	229	27	1,011	101
Boxelder	173	319	689	1,269
Elm	410	281	1,685	789
Green ash	149	790	538	2,161
Cottonwood	1,172	3,190	6,716	17,356
Hackberry	5	449	27	1,217
Black walnut	289	166	1,584	1,044
Other hardwoods	390	1,075	1,391	2,917
Total	3,718	8,777	17,601	33,718
All species	3,781	9,350	17,973	36,264

[1/] Figures have been adjusted from those published after the 1953 survey to conform to 1982 volumes because of changes in survey definitions and procedures.

[2/] International 1/4-inch rule.

Table 73.--Timber removals from growing stock and sawtimber on commercial forest land by item and species category, Nebraska, 1982

GROWING STOCK

Item	All species	Species category: Softwoods	Oak	Elm-hackberry	Ash	Cottonwood	Walnut	Other hardwoods
				-Thousand cubic feet-				
ROUNDWOOD PRODUCTS								
Saw logs	2,915	313	55	5	8	2,377	140	17
Veneer logs	112	--	--	--	--	99	13	--
Cooperage logs	18	--	18	--	--	--	--	--
Fuelwood	5,167	9	2,327	683	756	248	--	1,144
Posts	79	60	11	1	--	1	--	6
Pulpwood	12	12	--	--	--	--	--	--
Other	94	94	--	--	--	--	--	--
Total	8,397	488	2,411	689	764	2,725	153	1,167
LOGGING RESIDUE	440	39	20	--	3	364	13	1
OTHER REMOVALS	513	46	49	41	23	101	--	253
ALL TIMBER REMOVALS	9,350	573	2,480	730	790	3,190	166	1,421

SAWTIMBER

				-Thousand board feet[1]-				
ROUNDWOOD PRODUCTS								
Saw logs	18,551	1,767	265	42	51	15,420	911	95
Veneer logs	518	--	--	--	--	433	85	--
Cooperage logs	106	--	106	--	--	--	--	--
Fuelwood	14,190	27	6,415	1,886	2,081	682	--	3,099
Posts	93	37	30	3	--	3	--	20
Pulpwood	18	18	--	--	--	--	--	--
Other	512	512	--	--	--	--	--	--
Total	33,988	2,361	6,816	1,931	2,132	16,538	996	3,214
LOGGING RESIDUE	905	77	32	--	7	739	48	2
OTHER REMOVALS	1,371	108	16	75	22	79	--	1,071
ALL TIMBER REMOVALS	36,264	2,546	6,864	2,006	2,161	17,356	1,044	4,287

[1] International 1/4-inch rule.

Table 74.--Net annual growth and removals of growing stock on commercial forest land by species group, Nebraska, 1982

(In thousand cubic feet)

Species group	Net annual growth	Annual timber removals
Softwoods		
Ponderosa pine	5,415	517
Eastern redcedar	623	56
Total	6,038	573
Hardwoods		
White oak	718	2,233
Red oak	70	247
Hickory	125	165
Basswood	112	30
Soft maple	199	27
Boxelder	180	319
Elm	288	281
Green ash	408	790
Cottonwood	1,703	3,190
Black willow	137	401
Hackberry	665	449
Black walnut	135	166
Other hardwoods	321	479
Total	5,061	8,777
All species	11,099	9,350

Table 75.--Net annual growth and removals of sawtimber on commercial forest land by species group, Nebraska, 1982

(In thousand board feet)[1/]

Species group	Net annual growth	Annual timber removals
Softwoods		
Ponderosa pine	27,197	2,376
Eastern redcedar	502	170
Total	27,699	2,546
Hardwoods		
White oak	3,543	6,190
Red oak	96	674
Hickory	28	435
Basswood	1,015	93
Soft maple	386	101
Boxelder	369	1,269
Elm	316	789
Green ash	1,095	2,161
Cottonwood	4,690	17,356
Black willow	263	1,084
Hackberry	2,571	1,217
Black walnut	236	1,044
Other hardwoods	422	1,305
Total	15,030	33,718
All species	42,729	36,264

[1/] International 1/4-inch rule.

Table 76.--Net annual growth and removals of growing stock on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

(In thousand cubic feet)

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	1,479	1,479	--	10	10	--
State	538	380	158	16	--	16
County & municipal	21	--	21	--	--	--
Indian	-46	--	-46	58	--	58
Total	1,992	1,859	133	84	10	74
PRIVATE						
Farmer and Misc. private	9,107	4,179	4,928	9,266	563	8,703
All owners	11,099	6,038	5,061	9,350	573	8,777

Table 77.--Net annual growth and removals of sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

(In thousand board feet)[1/]

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	5,915	5,915	--	23	23	--
State	5,587	4,887	700	22	--	22
County & municipal	64	--	64	--	--	--
Indian	-526	--	-526	291	--	291
Total	11,040	10,802	238	336	23	313
PRIVATE						
Farmer and Misc. private	31,689	16,897	14,792	35,928	2,523	33,405
All owners	42,729	27,699	15,030	36,264	2,546	33,718

[1/] International 1/4-inch rule.

Table 78.--Net annual mortality of growing stock on commercial forest land by softwoods and hardwoods, Nebraska, 1955 and 1982

(In thousand cubic feet)

Species	1955[1/]	1982
Softwoods	200	438
Hardwoods	1,700	1,745
All species	1,900	2,183

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1982 volumes because of changes in survey definitons and procedures.

Table 79.--Annual mortality of growing stock on commercial forest land by species group and cause, Nebraska, 1982

(In thousand cubic feet)

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Ponderosa pine	401	72	84	--	--	--	--	245
Eastern redcedar	37	--	--	--	--	--	--	37
Total	438	72	84	--	--	--	--	282
Hardwoods								
White oak	77	--	--	--	--	--	--	77
Red oak	72	--	--	--	--	72	--	--
Hickory	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--
Soft maple	--	--	--	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--
Elm	311	--	136	--	--	--	--	175
Green ash	106	--	--	--	--	--	--	106
Cottonwood	898	--	--	--	--	225	--	673
Black willow	208	--	96	--	--	--	--	112
Hackberry	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--
Other hardwoods	73	--	--	--	--	--	--	73
Total	1,745	--	232	--	--	297	--	1,216
All species	2,183	72	316	--	--	297	--	1,498

Table 80.--Annual mortality of sawtimber on commercial forest land by species group and cause, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Ponderosa pine	1,566	403	--	--	--	--	--	1,163
Eastern redcedar	--	--	--	--	--	--	--	--
Total	1,566	403	--	--	--	--	--	1,163
Hardwoods								
White oak	--	--	--	--	--	--	--	--
Red oak	369	--	--	--	--	369	--	--
Hickory	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--
Soft maple	--	--	--	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--
Elm	923	--	467	--	--	--	--	456
Green ash	367	--	--	--	--	--	--	367
Cottonwood	3,502	--	--	--	--	835	--	2,667
Black willow	564	--	--	--	--	--	--	564
Hackberry	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--
Total	5,725	--	467	--	--	1,204	--	4,054
All species	7,291	403	467	--	--	1,204	--	5,217

[1/] International 1/4-inch rule.

Table 81.--Annual mortality of growing stock and sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
National Forest	121	121	--	385	385	--
State	37	37	--	--	--	--
County and municipal	--	--	--	--	--	--
Indian	134	--	134	620	--	620
Farmer	1,623	280	1,343	5,635	1,181	4,454
Misc. private corporation	98	--	98	282	--	282
Misc. private individual	170	--	170	369	--	369
All owners	2,183	438	1,745	7,291	1,566	5,725

[1/] International 1/4-inch rule.

Table 82.--Output of timber products by product, softwoods and hardwoods, and source of material, Nebraska, 1980

Product and softwoods and hardwoods	Standard units	Total		Roundwood products				Plant byproducts	
				Growing stock		Nongrowing stock			
		No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet
SAW LOGS									
Softwood	[1]/Thousand	1,773	313	1,773	313	--	--	--	--
Hardwood	board feet	17,218	2,654	16,881	2,602	337	52	--	--
Total		18,991	2,967	18,654	2,915	337	52	--	--
VENEER LOGS									
Softwood	[1]/Thousand	--	--	--	--	--	--	--	--
Hardwood	board feet	531	112	531	112	--	--	--	--
Total		531	112	531	112	--	--	--	--
COOPERAGE									
Softwood	[1]/Thousand	--	--	--	--	--	--	--	--
Hardwood	board feet	118	20	106	18	12	2	--	--
Total		118	20	106	18	12	2	--	--
FUELWOOD									
Softwood	[2]/Standard	1,115	77	135	9	181	12	799	56
Hardwood	cords	174,604	12,227	73,654	5,158	95,030	6,655	5,920	414
Total		175,719	12,304	73,789	5,167	95,211	6,667	6,719	470
POSTS									
Softwood	Thousand	116	88	79	60	37	28	--	--
Hardwood	pieces	215	121	34	19	181	102	--	--
Total		331	209	113	79	218	130	--	--
PULPWOOD									
Softwood	[2]/Standard	166	12	166	12	--	--	--	--
Hardwood	cords	--	--	--	--	--	--	--	--
Total		166	12	166	12	--	--	--	--
OTHER[3]/									
Softwood	Thousand	159	159	94	94	--	--	65	65
Hardwood	cubic feet	608	608	--	--	--	--	608	608
Total		767	767	94	94	--	--	673	673
ALL PRODUCTS									
Softwood	Thousand	--	649	--	488	--	40	--	121
Hardwood	cubic feet	--	15,742	--	7,909	--	6,811	--	1,022
Total		--	16,391	--	8,397	--	6,851	--	1,143

[1]/International 1/4-inch rule.

[2]/One cord equals 128 cubic feet including wood, bark, and air space.

[3]/Includes cabin logs, livestock bedding, mulch, and specialty items.

Table 83.--Output of roundwood products by product, softwoods and hardwoods, and source of material, Nebraska, 1980

(In thousand cubic feet)

Product and softwoods and hardwoods	All sources	Growing-stock trees			Rough and rotten trees	Salvable dead trees	Other sources
		Total	Sawtimber	Poletimber			
INDUSTRIAL PRODUCTS							
Saw logs							
Softwood	313	313	313	--	--	--	--
Hardwood	2,654	2,602	2,601	1	32	--	20
Subtotal	2,967	2,915	2,914	1	32	--	20
Veneer logs							
Softwood	--	--	--	--	--	--	--
Hardwood	112	112	112	--	--	--	--
Subtotal	112	112	112	--	--	--	--
Cooperage							
Softwood	--	--	--	--	--	--	--
Hardwood	20	18	18	--	2	--	--
Subtotal	20	18	18	--	2	--	--
Posts (Round and split)							
Softwood	88	60	18	42	--	4	24
Hardwood	121	19	14	5	3	--	99
Subtotal	209	79	32	47	3	4	123
Pulpwood							
Softwood	12	12	3	9	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	12	12	3	9	--	--	--
Other							
Softwood	94	94	86	8	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	94	94	86	8	--	--	--
All industrial products							
Softwood	507	479	420	59	--	4	24
Hardwood	2,907	2,751	2,745	6	37	--	119
Total	3,414	3,230	3,165	65	37	4	143
FUELWOOD							
Softwood	21	9	5	4	5	--	7
Hardwood	11,813	5,158	2,844	2,314	2,502	183	3,970
Total	11,834	5,167	2,849	2,318	2,507	183	3,977
ALL PRODUCTS							
Softwood	528	488	425	63	5	4	31
Hardwood	14,720	7,909	5,589	2,320	2,539	183	4,089
Total	15,248	8,397	6,014	2,383	2,544	187	4,120

Table 84.--Timber products from roundwood by species group and product, Nebraska, 1980

Species group	All products	Saw logs		Veneer logs		Fuelwood		Posts		Other[2]
	Thousand cubic feet	Thousand board feet[1]	Thousand cubic feet	Thousand board feet[1]	Thousand cubic feet	Cords	Thousand cubic feet	Thousand pieces	Thousand cubic feet	Thousand cubic feet
Softwoods										
Ponderosa pine	472	1,621	282	--	--	316	21	83	63	106
Eastern redcedar	56	152	31	--	--	--	--	33	25	--
Total	528	1,773	313	--	--	316	21	116	88	106
Hardwoods										
White oak	4,813	430	73	--	--	67,324	4,713	13	7	20
Red oak	527	56	9	--	--	7,280	510	13	8	--
Hickory	354	--	--	--	--	5,061	354	--	--	--
Basswood	54	35	6	--	--	665	48	--	--	--
Soft maple	46	59	9	--	--	506	37	--	--	--
Boxelder	222	--	--	--	--	3,190	222	--	--	--
Elm	593	24	2	--	--	8,434	591	--	--	--
Green ash	1,702	56	8	--	--	24,192	1,694	--	--	--
Cottonwood	3,034	15,420	2,377	433	99	7,934	557	3	1	--
Black willow	881	--	--	--	--	12,560	881	--	--	--
Hackberry	948	23	3	--	--	13,495	944	3	1	--
Black walnut	195	1,097	164	98	13	255	18	--	--	--
Sycamore	121	15	3	--	--	1,687	118	--	--	--
Osage-orange	316	--	--	--	--	3,142	220	166	96	--
Other hardwoods	914	3	[3]	--	--	12,959	906	17	8	--
Total	14,720	17,218	2,654	531	112	168,684	11,813	215	121	20
All species	15,248	18,991	2,967	531	112	169,000	11,834	331	209	126

[1] International 1/4-inch rule.

[2] Includes pulpwood, cooperage logs, and cabin logs.

[3] Less than 500 cubic feet.

Table 85.--Volume of primary plant residue by type of use and kind of material, Nebraska, 1980

(In thousand cubic feet)

Type of use	Kind of wood residue							
	Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Fiber products	--	--	--	--	--	--	--	--
Industrial fuel	--	--	--	--	--	--	--	--
Domestic fuel	55.9	414.4	55.9	412.5	--	1.9	34.8	312.2
Miscellaneous[3]	65.1	607.9	22.9	160.5	42.2	447.4	17.0	34.1
Not used[4]	13.5	490.5	6.2	367.6	7.3	122.9	19.4	269.5
All uses	134.5	1,512.8	85.0	940.6	49.5	572.2	71.2	615.8

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, small dimension, charcoal, and specialty items.

[4] Includes residue burned as waste.

Table 86.--All live tree biomass yields on commercial forest land by species group and forest type, Nebraska, 1983

(In pounds per acre green weight)

Species group	Forest type							
	Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods								
Ponderosa pine	100,200	1,345	--	3,098	301	--	1,337	6,033
Eastern redcedar	389	20,927	--	1,803	1,275	2,425	1,819	--
Rocky mountain juniper	--	--	--	--	--	783	--	--
Total	100,589	22,272	--	4,901	1,576	3,208	3,156	6,033
Hardwoods								
Select white oak	6,016	13,346	39,395	91,863	3,205	--	25,031	--
Post oak	--	--	--	--	109	--	--	--
Northern red oak	--	1,060	16,933	--	313	--	1,053	--
Black oak	--	--	7,236	--	--	--	--	--
Shagbark hickory	--	--	17,555	--	150	--	718	--
Bitternut hickory	--	--	5,049	2,066	--	--	564	--
Basswood	--	1,513	6,986	--	83	--	6,384	--
Soft maple	--	--	--	--	6,530	--	369	--
Boxelder	469	2,241	1,236	1,882	11,278	429	6,129	--
Elm	--	2,048	10,808	340	12,825	2,093	7,931	--
Green ash	599	5,514	5,462	5,536	16,849	4,609	7,441	--
Cottonwood	--	12,523	1,785	294	29,598	122,692	3,768	26,408
Black willow	--	704	--	--	6,734	6,565	316	--
Hackberry	--	1,535	2,676	3,713	2,161	513	22,515	--
Black walnut	--	321	5,270	329	1,942	--	4,654	--
Other hardwoods	--	681	5,135	640	6,983	2,948	8,656	1,419
Noncommercial species	--	660	8,384	--	1,463	385	868	--
Total	7,084	42,146	133,960	106,663	100,223	140,234	96,397	27,827
All species	107,673	64,418	133,960	111,564	101,799	143,442	99,553	33,860

Table 87.--All live tree biomass on commercial forest land by species group and forest type, Nebraska, 1983

(In green tons)

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	7,493,871	7,319,631	28,385	--	57,924	18,378	--	51,151	18,402
Eastern redcedar	751,397	28,388	441,569	--	33,716	77,757	100,378	69,589	--
Rocky mountain juniper	32,434	--	--	--	--	--	32,434	--	--
Total	8,277,702	7,348,019	469,954	--	91,640	96,135	132,812	120,740	18,402
Hardwoods									
Select white oak	4,078,267	439,403	281,595	486,524	1,717,837	195,486	--	957,422	--
Post oak	6,664	--	--	--	--	6,664	--	--	--
Northern red oak	290,870	--	22,376	209,131	--	19,072	--	40,291	--
Black oak	89,370	--	--	89,370	--	--	--	--	--
Shagbark hickory	253,460	--	--	216,812	--	9,167	--	27,481	--
Bitternut hickory	122,579	--	--	62,350	38,638	--	--	21,591	--
Basswood	367,495	--	31,929	86,271	--	5,093	--	244,202	--
Soft maple	412,436	--	--	--	--	398,322	--	14,114	--
Boxelder	1,072,172	34,284	47,284	15,261	35,202	687,944	17,780	234,417	--
Elm	1,355,404	--	43,205	133,476	6,351	782,351	86,647	303,374	--
Green ash	1,834,365	43,787	116,343	67,458	103,527	1,027,806	190,830	284,614	--
Cottonwood	7,401,309	--	264,229	22,042	5,489	1,805,471	5,079,410	144,124	80,544
Black willow	709,528	--	14,858	--	--	410,802	271,795	12,073	--
Hackberry	1,149,056	--	32,382	33,049	69,434	131,802	21,236	861,153	--
Black walnut	374,486	--	6,769	65,088	6,154	118,459	--	178,016	--
Other hardwoods	973,790	--	14,377	64,033	11,972	425,949	122,039	331,093	4,327
Noncommercial species	255,851	--	13,924	103,540	--	89,235	15,948	33,204	--
Total	20,747,102	517,474	889,271	1,654,405	1,994,604	6,113,623	5,805,685	3,687,169	84,871
All species	29,024,804	7,865,493	1,359,225	1,654,405	2,086,244	6,209,758	5,938,497	3,807,909	103,273

Table 88.--All live tree biomass weight on commercial forest land by species group and tree biomass component, Nebraska, 1983

(In green tons)

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
Softwoods						
Ponderosa pine	7,493,871	455,183	4,441,953	1,914,849	518,649	163,237
Eastern redcedar	751,397	369,165	193,225	78,397	90,441	20,169
Rocky mountain juniper	32,434	--	--	--	23,110	9,324
Total	8,277,702	824,348	4,635,178	1,993,246	632,200	192,730
Hardwoods						
Select white oak	4,078,267	206,659	1,607,676	665,797	1,153,468	444,667
Post oak	6,664	--	4,769	1,895	--	--
Northern red oak	290,870	--	182,065	76,896	22,513	9,396
Black oak	89,370	26,438	23,508	9,751	21,023	8,650
Shagbark hickory	253,460	76,252	110,133	45,700	15,111	6,264
Bitternut hickory	122,579	18,183	62,482	26,005	11,560	4,349
Basswood	367,495	22,644	177,543	74,005	66,358	26,945
Soft maple	412,436	38,905	168,779	70,095	95,105	39,552
Boxelder	1,072,172	26,769	179,021	73,835	589,705	202,842
Elm	1,355,404	365,497	446,737	183,223	271,703	88,244
Green ash	1,834,365	165,096	839,456	347,322	348,685	133,806
Cottonwood	7,401,309	72,398	4,871,130	2,035,833	313,736	108,212
Black willow	709,528	48,485	399,120	162,153	72,447	27,323
Hackberry	1,149,056	132,470	591,317	241,813	130,700	52,756
Black walnut	374,486	41,055	180,941	74,518	55,679	22,293
Other hardwoods	973,790	135,743	242,034	100,571	362,562	132,880
Noncommercial species	255,851	--	--	--	204,221	51,630
Total	20,747,102	1,376,594	10,086,711	4,189,412	3,734,576	1,359,809
All species	29,024,804	2,200,942	14,721,889	6,182,658	4,366,776	1,552,539

Table 89.--Sampling errors[1/] for estimates smaller than the State totals of volume, net growth, removals, and area of commercial forest land, Nebraska, 1983

Sampling error (percent)	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
	Thousand acres	Million cubic feet			Million board feet[2/]		
5	784.2	1,361.6	52.8	158.2	6,009.7	351.5	633.6
10	196.0	340.4	13.2	39.5	1,502.4	87.9	158.4
15	87.1	151.3	5.9	17.6	667.7	39.1	70.4
20	49.0	85.1	3.3	9.9	375.6	22.0	39.6
25	31.4	54.5	2.1	6.3	240.4	14.1	25.3
50	7.8	13.6	0.5	1.6	60.1	3.5	6.3
100	2.0	3.4	0.1	0.4	15.0	0.9	1.6

[1/] At the 68-percent probability level.

[2/] International 1/4-inch rule.

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The second forest resource inventory of Nebraska showed a 25 percent decline in commercial forest area and 23 percent gain in growing-stock volume between 1955 and 1983.

KEY WORDS: Area, volume, growth, mortality, removals.

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Fuelwood Production and Sources from Roundwood in Illinois, 1983

James E. Blyth, Dwight R. McCurdy, John H. Burde and W. Brad Smith

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FOREWARD

This bulletin contains the results of a detailed study of 1983 fuelwood production and sources in Illinois. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current fuelwood production information for planning projects.

Special thanks are given to the Illinois households and commercial fuelwood producers that supplied information for this study. Their cooperation is greatly appreciated.

We also acknowledge with special thanks the forestry students at Southern Illinois University for their diligence in phoning and obtaining answers from these households and commercial fuelwood producers.

Quantities shown may differ slightly from one table to another because of rounding differences, but these differences are insignificant.

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FUELWOOD PRODUCTION AND SOURCES FROM ROUNDWOOD IN ILLINOIS, 1983

James E. Blyth, *Principal Market Analyst, St. Paul, Minnesota,*
Dwight R. McCurdy, *Professor,*
and John H. Burde, *Associate Professor,*
Southern Illinois University, Carbondale, Illinois;
and W. Brad Smith, *Mensurationist, St. Paul, Minnesota*

HIGHLIGHTS

- Total fuel production from roundwood in 1983 was 1,633,000 cords.
- More than 99 percent of the fuelwood was cut by households; the remainder was cut by commercial producers.
- White oak and red oak comprised 53 percent of the fuelwood cut.
- Private land supplied 97 percent of the fuelwood cut.
- Rural woodland furnished 46 out of every 100 cords of fuelwood.
- Of the remaining 54 cords out of 100 that were cut from other land classes, 23 cords came from cities and villages; 21 cords came from fencerows, windbreaks, and rural yards; and 10 cords came from pasture and cropland.
- Growing stock on commercial forest land (CFL) was a minor source of fuelwood. An estimated 100,000 cords (6 percent) came from growing stock on CFL.
- Dead trees on CFL provided 31 percent of the fuelwood. Nongrowing stock on CFL was 6 times as important for fuelwood as growing stock on CFL.
- Commercial producers got a much greater proportion (2.5 times) of their fuelwood from growing stock on CFL than did households.
- No county produced more than 7,000 cords of fuelwood from growing stock on CFL.

HISTORICAL FUELWOOD DEMAND

Wood was the primary energy source in the United States until the late 1800's but by 1900 provided only about 25 percent of this Country's energy. Between 1949 and 1974 fuelwood use declined steadily for utilities, residences, and commercial businesses, although it increased steadily for industries. Wood supplied only 2 percent of U.S. energy in 1972, the year before the Arab embargo sent oil prices spiraling upward. In recent years wood has been making a moderate comeback. Both residential and industrial use of fuelwood is increasing. Between 1974 and 1981, roused by higher prices for fossil fuels such as coal, oil, and natural gas, Americans increased their overall use of wood fuels by 45 percent. The Department of Energy found that the number of households using firewood as their main space-heating fuel more than doubled between 1978 and 1980. In 1980 wood furnished about 1.5 quads (1.5 quadrillion BTU's) of energy, approximately 3 percent of the Nation's total. A recent U.S. Department of Agriculture, Forest Service survey found that during the 1980-1981 heating season, American households burned 42 million cords of fuelwood, which is equal to one-fifth of the Nation's total timber harvest. A U.S. Congress Office of Technology Assessment report on bio-energy says the annual total use of wood for energy could reach 5 to 10 quads by 2000.

NEED FOR A PRODUCTION STUDY

A study of Illinois fuelwood production from roundwood in 1983 was necessary to provide estimates of fuelwood production for the third Illinois forest inventory and to determine the impact of fuelwood production on the forest resource. Forest managers and users are questioning the magnitude of

the fuelwood harvest and the sources of the wood. How much fuelwood is harvested from forest land? Urban areas? Fencerows and windbreaks? Pastures and cropland? How much fuelwood comes from public land? Does most of the fuelwood come from growing stock? Are dead trees an important source? Are commercial fuelwood producers a major source of fuelwood? What are the principal species cut? Where are the principal fuelwood-producing areas in Illinois? Are saw log markets threatened by fuelwood producers?

To answer these and other related questions in Illinois, a cooperative study was completed in 1983 by the North Central Forest Experiment Station, the Department of Forestry at Southern Illinois University, and the Illinois Department of Conservation.

ANALYSIS OF PRODUCTION

Geographic source.—The Prairie Unit supplied 81 percent of the 1.633 million cords of fuelwood cut from roundwood in 1983. Thirteen percent was supplied by the Claypan Unit and 6 percent by the Southern Unit. Counties each producing more than 100,000 cords were Will, McHenry, and Cook (fig. 1).

Type of producer.—Fuelwood producers are divided into two segments—households and commercial. Households cut all but 7,000 cords in 1983. Harvesting by commercial producers was proportionally greatest in the Southern Unit:

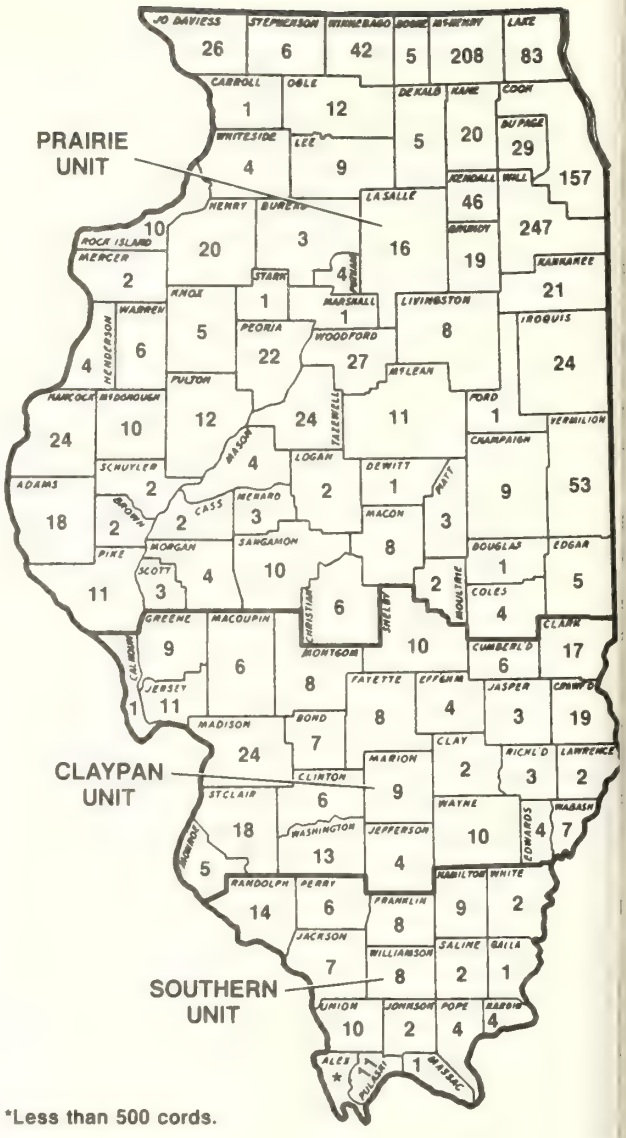
Survey Unit	Production	
	Households	Loggers
	(Thousand cords)	
Southern	88	1
Claypan	213	2
Prairie	1,325	4
Total	1,626	7

Species.—White oak and red oak were the principal fuelwood species, they accounted for 53 percent of the total. Leading species cut were:

Species	Volume	Percent
	(Thousand cords)	
White oak	541	33
Red oak	325	20
Soft maple	141	9
Hickory	135	8
Elm	119	7
Ash	69	4

No other species supplied more than 32,000 cords. Softwoods (pine and redcedar) supplied less than 1 percent.

Red oak and white oak were each important for fuel in every Unit. Hickory and ash were significant in the Southern and Claypan Units. Soft maple an elm were prominent in the Prairie Unit.



*Less than 500 cords.

Figure 1.—*Fuelwood production by county fro roundwood (in thousand standard cords), Illinoi 1983. Forest Survey Units shown are the geograph ical areas used by the Forest Inventory and Anal sis Project to report periodic inventories and use the Nation's forest resources.*

Private vs. public land.—Private land provided 9 percent of the fuelwood cut. Public land furnishe from 2 to 4 percent in each Unit:

Unit	Private	Publ
	(Thousand cords)	
Southern	85	4
Claypan	210	5
Prairie	1,288	41
All	1,583	50

Forest industry land (owned by firms with primary wood-using mills) supplied only 1,000 cords of fuelwood. Forest industries own a nominal amount of Illinois land.

County and municipal land was the chief source of fuelwood from the public sector:

Public land class	Fuelwood volume (Thousand cords)	Public (Percent)
County and municipal	40	80
Other Federal	6	12
State	3	6
National Forest	1	2
Total	50	100

Oak and maple were the primary species cut on county and municipal land.

Rural woodland[1] vs. other land.—Forty-six out of every 100 cords of fuelwood came from rural woodland. The remainder came from diverse sources such as cities and villages; windbreaks, fencerows, and yards of homes in rural areas; and pasture and cropland. Rural woodland supplied more than half the fuelwood in the more heavily forested Southern and Claypan Units and 44 percent in the Prairie Unit:

Unit	Rural woodlands (Thousand cords)	Other land
Southern	45	44
Claypan	119	96
Prairie	590	739
All	754	879

Of the 54 cords out of 100 obtained on noncommercial forest and nonforest land areas, 23 came from cities and villages; 21 came from fencerows, windbreaks, and rural yards; and 10 came from pasture and cropland. Oak was the principal fuelwood species cut on each of these land classes.

Ninety-six percent of the fuelwood produced in cities and villages came from the more heavily urbanized Prairie Unit. Fuelwood cut from pasture and cropland in the Claypan and Southern Units was proportionally larger than their overall share of fuelwood output. The proportion of fuelwood from windbreaks, fencerows, and rural yards in each Unit was near the proportion of fuelwood production from all land classes in each Unit.

Growing stock vs. nongrowing stock.—Growing stock (see definitions) on commercial forest land (CFL) was not a major source of fuelwood. Of the 1,633,000 cords of fuelwood cut from roundwood, an estimated 100,000 cords (6 percent) came from growing stock on CFL. Producers cut another 586,000 cords (36 percent) from nongrowing stock on CFL:

Source	Volume (Thousand cords)	Percent of total
Growing stock on CFL	100	6
Nongrowing stock on CFL		
Dead trees	501	31
Tops and limbs of growing stock trees	65	4
Cull trees and sections	20	1
Saplings	([2])	([3])
Nonforest and non CFL	947	58
Total	1,633	100

Nonforest and noncommercial forest land sources (such as cities, villages, pasture, cropland, fencerows, and windbreaks), supplied the other 947,000 cords (58 percent).

None of the Units harvested large quantities of growing stock on CFL for fuelwood. The highest proportion cut from growing stock was in the Claypan Unit:

Unit	Growing stock Volume (Thousand cords)	Percent of unit total
Southern	9	10
Claypan	33	15
Prairie	58	4
All	100	6

Nine counties—Bond, Carroll, Franklin, Hancock, Mason, Montgomery, Schuyler, Wabash, and Warren—each produced more than 25 percent of their fuelwood from growing stock (fig. 2). No group of contiguous counties showed a pattern of heavy harvesting of growing stock for fuel. Counties each producing more than 4,000 cords of fuelwood from growing stock were Crawford, Grundy, Hancock, Madison, McHenry, Will, and Winnebago (fig. 3). Two of these counties (McHenry and Will) are near Chicago, and each produced less than 3 percent of their total fuelwood from growing stock. Sixteen counties did not produce any fuelwood from growing stock.

[1] *Rural woodland was assumed to be commercial forest land.*

[2] *Less than 500 cords.*

[3] *Less than 0.5 percent.*

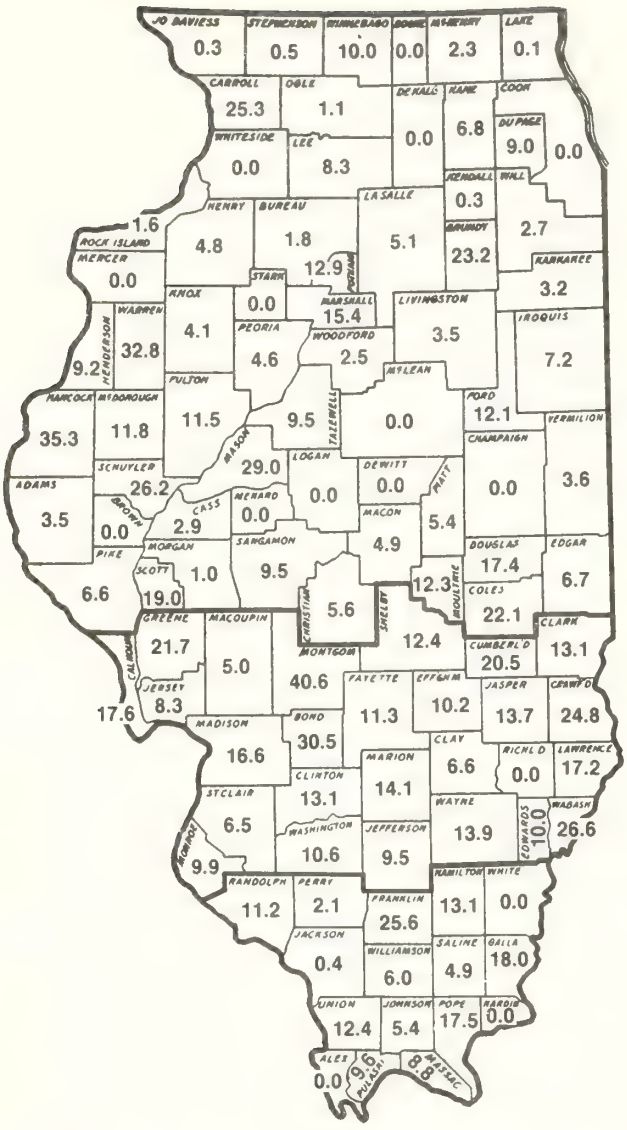


Figure 2.—*Percent of fuelwood harvest from growing stock on commercial forest land by county, Illinois, 1983.*

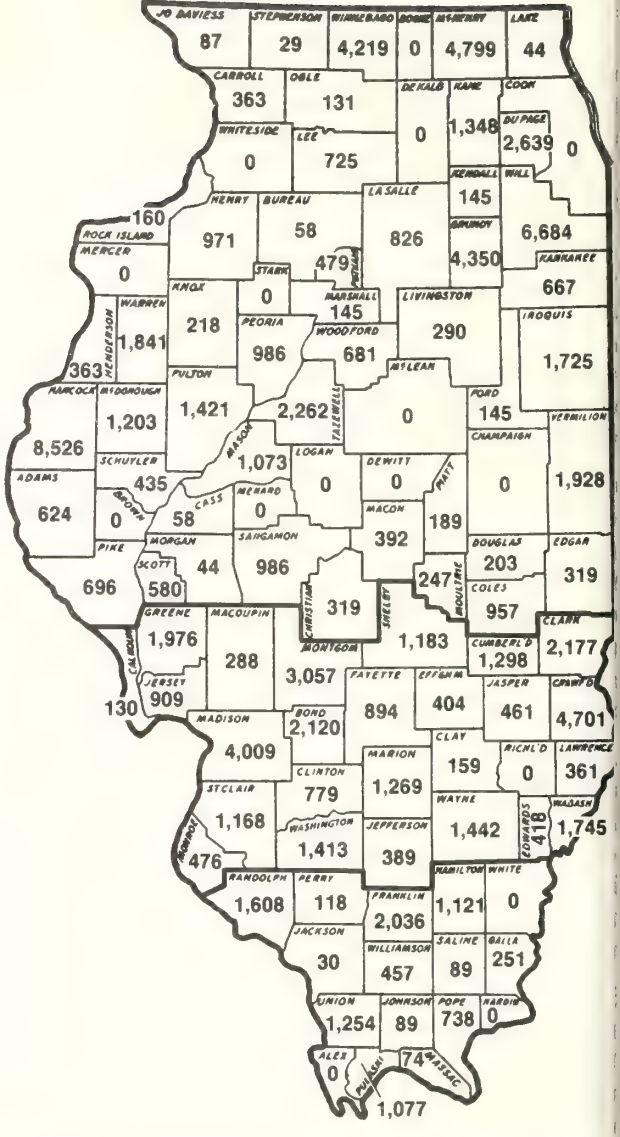


Figure 3.—*Number of cords of fuelwood harveste from growing stock on commercial forest land b county, Illinois, 1983.*

Harvesting of dead trees on CFL for fuel was uniform across the Units; it ranged from 26 percent in the Claypan to 31 percent in the Prairie to 34 percent in the Southern. Dead trees on CFL provided more than half of the fuelwood cut in each of 24 counties. Five Prairie Unit counties (Jo Daviess, Lake, McHenry, Will, and Woodford) each furnished more than 20,000 cords from dead trees on CFL.

In each of eight counties, more than 80 percent of the fuelwood came from nonforest and noncommercial forest land. Three counties (Cook, Will, and McHenry) each produced more than 95,000 cords of fuelwood from nonforest and noncommercial forest land.

Compared to households, commercial producers cut a higher proportion of their fuelwood from growing stock on CFL. Commercial producers cut 15 percent from growing stock compared to 6 percent by households. By Survey Unit, the proportion ha vested from growing stock ranged from 14 to 18 pe cent for commercial cutters and 4 to 15 percent fo households. In the Prairie Unit, the difference wa most striking; commercial producers cut 14 percer from growing stock but households cut only 4 pe cent.

SUMMARY AND CONCLUSIONS

Total output of fuelwood during 1983 in Illino from roundwood was 1,633,000 cords. This volume fuelwood contained sufficient heat value to repla approximately 164,000,000 gallons of No. 2 fuel oil More than 99 percent was hardwoods.

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[4]*In making comparisons of heat value betwee fuels, another factor to consider is the energy require to produce and deliver the fuels to the consumer.*

The Prairie Unit contains 65 percent of all Illinois nd and only about 35 percent of the forest land but roduced 81 percent of the fuelwood. The denser popation in the Prairie Unit compared to the rest of e State was a major reason for the greater intenty of fuelwood harvesting in this Unit.

Households outproduced commercial cutters by a tio of 220 to 1 Statewide. Oak comprised slightly ore than half of the harvest. Private nonforest and oncommercial forest land was the chief source of elwood. Slightly more than two-fifths of the proction was on rural woodland, but nearly 3 out of cords cut on rural woodland came from dead trees.

Growing stock on CFL was a minor source of fuelood; it accounted for only 6 percent of the output or ough to supply one, 170 ton/day pulpmill with ood for 1 year. No county produced more than 7,000 rds of fuelwood from growing stock on CFL. Nonowing stock on CFL was 6 times as important for elwood as growing stock. Dead trees on CFL acounted for 3 out of 10 cords of fuelwood produced.

Commercial producers cut a nominal amount of elwood in 1983. However, commercial producers t a much larger proportion (2.5 times) of their fuelood from growing stock on CFL than did houselds. If commercial producers become more impornt suppliers of fuelwood, the percentage of growing ock in the mix of fuelwood will rise.

Some forest managers and wood procurement anagers in Illinois may fear that large quantities fuelwood are being cut from growing stock that reviously would have been used for saw logs and her forest products. Our study results should reeve many of their concerns. Much of the fuelwood is om dead trees unlikely to be suitable for other roducts and from trees on nonforest and noncomercial forest land that are not generally a forest dustry supply source.

During the next 5 to 8 years, growing stock is kely to remain a minor source of Illinois fuelwood. arge quantities of dead trees, tops and limbs, and ees on nonforest land are available each year for elwood use. Follow-up fuelwood studies at 5-year tervals would be useful in determining trends in arvesting growing stock for fuel. Changes in the mmercial producer to household fuelwood production ratio will be significant in determining the proortion of fuelwood cut from growing stock on CFL.

Use of dead trees and cull trees on CFL for fuel is ntributing to forest productivity increases. As deand for fuelwood has increased, more of these trees ave been removed for a profit as fuel or without eed for subsidized incentives. Consequently, less money has been required for a given level of timber stand improvement than if fuelwood demand had remained at low levels.

STUDY METHODS

Data for this publication came from sampling Illinois households and canvassing all known commercial fuelwood producers with formal questionnaires approved by the Federal Office of Management and Budget.

Households

The respondent universe was all households in Illinois with listed telephones. Illinois was divided into two Districts: (1) the Chicago District (2,346,617 households) and (2) the Outside Chicago District (1,698,757 households). The Chicago District contains Cook, DuPage, Kane, Kendall, and Lake Counties.

A total sample size of about 7,000 households was selected based on funding available and a desired standard error of less than ±20 percent Statewide at one standard deviation. To ensure at least 5 households would be sampled in each county, 6,024 sample households were selected in the Outside Chicago District. The sample size ranged from 6 households in Pope County to 788 households in Cook County (fig. 4).

Households were selected for the sample by the Department of Forestry at Southern Illinois University (DF,SIU) using systematic random sampling techniques. In each of the two Districts, households were selected from current phone books using the following procedures:

1. Collect all current phone directories within the county.
2. Eliminate all duplicate books and numbers; eliminate all out-of-county numbers.
3. Estimate the total number of residential numbers in each book. Eliminate all nonhousehold numbers (business, institutional, etc.) in each book. Record the number of pages per book.
4. Determine the number of calls to be made from each book and the interval per call by the following equations:

a. $$\frac{\text{Total residential numbers in all books}}{\text{sample size}} = \text{interval per call.}$$

b. $$\frac{\text{Number of residential phones per book}}{\text{interval}} = \text{number of calls needed from this book.}$$

c. $$\frac{\text{Number of pages per book}}{\text{number of calls per book}} = \text{interval per call for this book.}$$

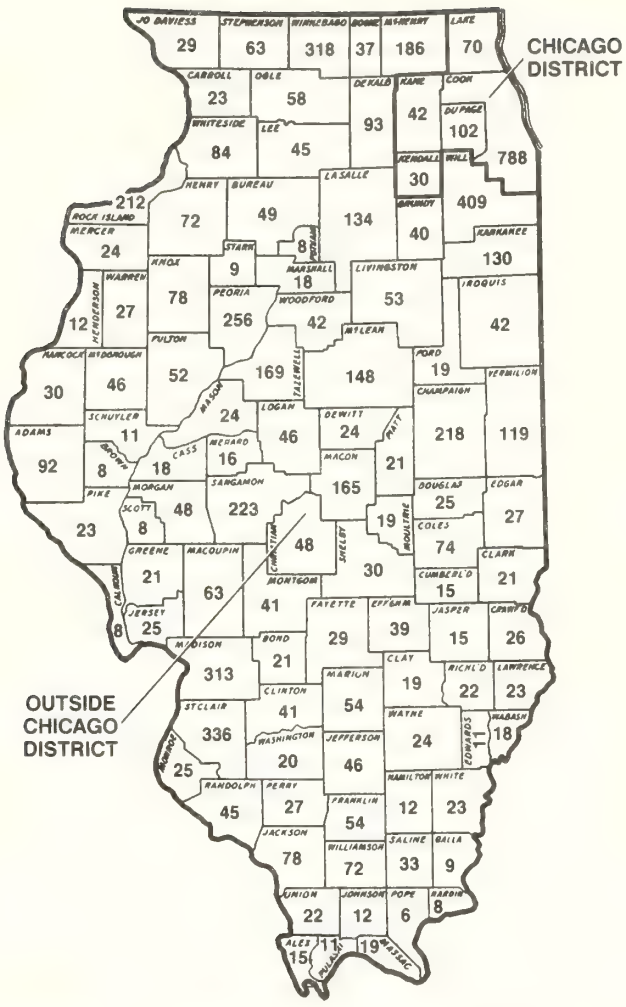

Figure 4.—*Number of sample households in each county.*

Southern Illinois University forestry students interviewed the sample households by phone using a formal questionnaire prepared by the North Central Forest Experiment Station (NCFES). The survey was conducted during March, April, and May, 1983. Calls were made on weekday evenings or on weekends.

Initial editing was completed by DF,SIU and final editing and data compiling were done by the NCFES. Some respondents did not know the species cut for fuel except in general terms such as mixed hardwoods, oak, maple, etc. Some assumptions were made to facilitate prorating the volume reported in general terms to specific species by county. The assumptions were:

Mixed hardwoods: For each county, prorate mixed hardwoods from each source in table 1 to the other species groups shown for that source, unless two or fewer species were found for that source. If two or fewer species groups were represented, prorate according to the species groups found in "a sources."

Oak: For each county in a Survey Unit, prorate t white and red oak on the basis of the inventory vo ume in the Unit at the time of the last inventory.

Maple: Give double weighting to hard maple. Fo each county in a Survey Unit, prorate to hard an soft maple on the basis of the inventory volume i the Unit at the time of the last inventory.

Hickory: For each county in a Survey Unit, prorat to pecan hickory and other hickory on the basis the inventory volume for select hickory and othe hickory at the time of the last inventory.

Sampling rates were about 8 times as high in th Outside Chicago District as in the Chicago Distric Expansion factors were determined for household in each District by dividing the number of hous holds in a District by the number of sample hous holds in that District. The factors were 2,273.9 in th Chicago District and 282.0 in the Outside Chicag District. These expansion factors were used to est mate the total fuelwood production by households i each county.

Commercial Procedures

A list of commercial fuelwood producers was com piled for each county by the Illinois Department Conservation and the DF,SIU. Sources of the comp lation were the yellow pages of Illinois telephon directories and Illinois newspaper ads for fuelwoo available for sale. Newspaper ads were scanned fo several months to find producers. A total of 187 com mercial producers were found.

Using a formal questionnaire similar to that use for households, forestry graduate students at SI canvassed all of the commercial producers by phon during August 1983. Possible duplicate sampling commercial producers was minimized by questio ing all sample households producing more than 2 cords of fuelwood to determine if they were comme cial producers.

For estimating growing stock on CFL harveste for fuel, "rural woodland" (woodland outside city an village limits) was assumed to be commercial fores land (CFL). Logging utilization factors for fuelwoo were used to estimate the quantity of growing stoc cut for fuelwood on CFL. The Station develope these factors in Michigan during 1964-1965 by mea suring trees cut for fuelwood on active harvestin operations. For fuelwood cut from live trees on CFI 63 percent was estimated to be growing stock. Fo fuelwood cut or collected from logging residue o CFL, an estimated 27 percent was growing stock.

APPENDIX

SAMPLING ERROR

All the reported figures are estimates based on sampling procedures designed to accurately estimate fuelwood production. A measure of reliability of these figures is given by sampling errors. These sampling errors mean that the chances are two out of three that the results for the sample differ by no more than the amount indicated from the results that would have been obtained if a 100-percent sample of all households and commercial producers had been made. Sampling error for fuelwood production was ±14.92 percent on a volume of 1,633,248 cords.

In retrospect, the Statewide sampling error for fuelwood production could have been lowered if the sample of households had been larger in the Chicago District and correspondingly lower in the Outside Chicago District. Sampling error was ±28.53 percent for 835,248 cords of fuelwood produced by Chicago District households and commercial producers and ±6.39 percent for 798,000 cords produced by Outside Chicago District households and commercial producers.

We assumed that Chicago District households would produce one-third or less of the total household fuelwood. Chicago District households (58 percent of the total) actually produced 51 percent of the household fuelwood.

STUDY LIMITATIONS

Two components of total fuelwood production are not included in this report. First, fuelwood produced from wood residue generated at primary wood-using mills (such as sawmills, cooperage mills, etc.) is not included. However, a cooperative Illinois primary wood-using mill study between the Illinois Department of Conservation and the North Central Forest Experiment Station will provide an estimate of fuelwood produced from primary mill residue. Information on this source of fuelwood will be published in another paper.

Second, fuelwood produced from wood residue generated at secondary wood-using mills (such as millwork plants, furniture plants, and office and store fixture manufacturers) was not estimated. Secondary wood-using mill residue is a minor source of fuelwood that has no direct impact and only a nominal indirect influence on the forest resource used for fuel.

Households without listed telephones were not sampled. Study results may be slightly biased if the fuelwood harvest per household without listed phones is significantly different in quantity or sources from the fuelwood harvest per household with listed phones. Harvesting characteristics by these two groups was assumed to be similar, and expansion factors for estimating total fuelwood production took into account all households in Illinois.

Each sample household was asked how much fuelwood their household cut during the previous 12 months. Likewise, each commercial producer was asked a similar question concerning their firm. Because the study was conducted during several months in 1983, the actual fuelwood harvest was for varying 12-month periods in 1982 and 1983 depending on when the respondent was called. For purposes of this paper, production has been labelled as 1983 for ease of discussion and because the exact date does not significantly affect the analysis or findings.

Some commercial producers may not advertise in the yellow pages or in newspapers. Consequently, they were not included in the study and would cause our estimated production to be conservative. However, we believe the quantity excluded is insignificant because the producers in the study cut small quantities of fuelwood.

DEFINITION OF TERMS

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future. In this paper, "woodland areas outside city or village limits (rural woodland)" were assumed to be commercial forest land.

County and municipal land.—Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Forest industry land.—Land owned by companies or individuals operating primary wood-using mills.

Growing-stock trees.—Live trees of commercial species qualifying as desirable and acceptable trees. Excludes rough cull and rotten cull trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and over, from a 1-foot stump to a minimum 4-inch top diameter outside bark of the central stem.

Indian land.—Tribal land held in fee but administered by the Federal Government.

Logging residue.—The unused portions of trees cut or killed by logging.

National Forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, power line clearings of any width and 1- to 40-acre areas of water classified by the Bureau of the Census as land.

Poletimber trees.—Growing-stock trees of commercial species at least 5 inches d.b.h., but smaller than sawtimber size.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Roundwood.—Logs and bolts from harvested trees including chips from harvested trees.

Saw log portion.—That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber trees.—Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting Regional specifications for freedom from defect. Softwoods must be at least 9 inches d.b.h. Hardwoods must be at least 11 inches d.b.h.

Standard cord.—A pile of logs 4 × 4 × 8 feet (128 cubic feet including air space and bark). A cord of fuelwood contains 70 cubic feet of wood and 58 cubic feet of bark and air space.

State land.—Land owned by States or land leased to these governmental units for 50 years or more.

Upper stem portion.—That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4 inches outside bark.

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

Species group 1/	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Alexander County								
Oak	3	--	--	--	--	3	--	--
Hickory	1	--	--	--	--	1	--	--
All species	4	--	--	--	--	4	--	--
Franklin County								
Oak	2,089	1	766	110	595	72	535	10
White oak	599	--	60	--	485	--	54	--
Red oak	1,203	--	120	--	971	--	112	--
Hickory	390	--	5	35	188	5	154	3
Maple	160	--	1	--	67	--	92	--
Elm	125	--	1	--	62	--	62	--
Ash	117	--	--	--	56	2	57	2
Black cherry	3	--	1	--	--	2	--	--
Black walnut	564	--	--	--	--	564	--	--
Locust	1	--	1	--	--	--	--	--
Sassafras	551	--	55	--	446	--	50	--
Mixed hardwoods	2,162	47	2,115	--	--	--	--	--
Other hardwoods 2/	2	--	--	--	2	--	--	--
All species	7,966	48	3,125	145	2,872	645	1,116	15
Gallatin County								
Oak	78	--	--	--	2	--	76	--
Hickory	58	--	--	--	1	--	57	--
Pecan hickory	169	--	--	--	--	169	--	--
Elm	101	--	4	--	--	--	97	--
Ash	654	--	--	--	36	394	224	--
Sycamore	4	--	4	--	--	--	--	--
Sweet gum	4	--	4	--	--	--	--	--
Locust	58	--	--	--	1	--	57	--
Mixed hardwoods	272	--	--	--	130	--	142	--
All species	1,398	--	12	--	170	563	653	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Hamilton County								
Oak	3,389	--	1,738	--	630	--	1,021	--
Hickory	1,728	--	537	--	532	--	659	--
Maple	1,031	--	56	--	476	--	499	--
Elm	117	--	29	--	22	--	66	--
Ash	1,068	--	708	--	83	--	277	--
Mixed hardwoods	1,215	--	1,215	--	--	--	--	--
All species	8,548	--	4,283	--	1,743	--	2,522	--
Hardin County								
Oak	1,069	--	400	601	2	41	25	--
Hickory	12	--	--	--	1	11	--	--
Mixed hardwoods	2,666	--	390	1,147	--	1	--	1,128
All species	3,747	--	790	1,748	3	53	25	1,128
Jackson County								
Oak	4,966	--	83	2,170	12	40	2,650	11
Hickory	488	--	79	278	7	18	90	16
Maple	117	--	--	117	--	--	--	--
Elm	254	--	254	--	--	--	--	--
Ash	201	--	191	--	1	5	1	3
Sycamore	5	--	--	--	--	--	5	--
Black cherry	2	--	--	--	--	--	--	2
Yellow-poplar	3	--	--	--	--	2	--	1
Locust	1	--	1	--	--	--	--	--
Honeylocust	3	--	--	--	--	2	--	1
Sassafras	3	--	--	--	--	2	--	1
Apple	42	--	--	4	--	--	38	--
Mixed hardwoods	947	--	--	782	66	--	99	--
All species	7,032	--	608	3,351	86	69	2,883	35

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Johnson County								
Pine	1	--	1	--	--	--	--	--
Total softwoods	1	--	1	--	--	--	--	--
Oak	1,254	254	27	216	68	8	681	--
Hickory	161	85	8	--	41	--	27	--
Ash	141	85	5	--	28	--	18	5
Mixed hardwoods	99	--	99	--	--	--	--	--
Total hardwoods	1,655	424	139	216	137	8	726	5
All species	1,656	424	140	216	137	8	726	5
Massac County								
Oak	401	--	59	132	75	29	106	--
Hickory	181	--	1	12	5	128	35	--
Pecan hickory	27	--	27	--	--	--	--	--
Maple	30	--	30	--	--	--	--	--
Elm	31	--	27	--	4	--	--	--
Ash	18	--	--	1	16	1	--	--
Sweet gum	77	--	77	--	--	--	--	--
Blackgum	14	--	14	--	--	--	--	--
Sassafras	10	--	9	--	--	1	--	--
Mixed hardwoods	47	--	23	24	--	--	--	--
Other hardwoods	1	--	--	--	--	1	--	--
All species	837	--	267	169	100	160	141	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Perry County								
Oak	4,702	13	739	701	211	--	3,038	--
Hickory	497	--	136	136	10	--	215	--
Maple	3	1	2	--	--	--	--	--
Elm	90	2	20	--	7	--	61	--
Ash	11	3	8	--	--	--	--	--
Sycamore	85	--	17	--	7	--	61	--
Black cherry	44	3	8	33	--	--	--	--
Mixed hardwoods	217	217	--	--	--	--	--	--
All species	5,649	239	930	870	235	--	3,375	--
Pope County								
Oak	1,461	--	298	694	452	4	13	--
Hickory	234	--	--	--	228	1	5	--
Ash	1,243	--	237	553	451	--	2	--
Sassafras	197	--	59	138	--	--	--	--
Mixed hardwoods	1,094	--	23	24	--	1	1,046	--
All species	4,229	--	617	1,409	1,131	6	1,066	--
Pulaski County								
Oak	4,609	--	2,302	305	957	9	1,036	--
Hickory	2,804	--	1,805	16	490	2	491	--
Maple	5	--	--	5	--	--	--	--
Elm	324	--	226	--	10	--	88	--
Ash	1,975	--	1,128	846	--	1	--	--
Hackberry	1	1	--	--	--	--	--	--
Black cherry	564	--	282	282	--	--	--	--
Locust	11	4	--	7	--	--	--	--
Black locust	3	--	--	--	2	--	1	--
Mixed hardwoods	979	--	157	314	254	--	254	--
All species	11,275	5	5,900	1,775	1,713	12	1,870	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
Randolph County								
Oak	4,667	577	1,156	64	1,378	--	1,492	--
Hickory	2,377	192	545	31	553	--	1,056	--
Pecan hickory	96	--	10	--	--	--	86	--
Maple	1,841	--	159	31	52	--	1,599	--
Elm	651	--	34	18	19	--	580	--
Ash	2,779	--	429	28	474	--	1,848	--
Sycamore	141	--	--	--	--	--	141	--
Black cherry	141	--	--	--	--	--	141	--
Sassafras	134	--	--	--	19	--	115	--
Mixed hardwoods	1,592	--	509	130	31	--	922	--
All species	14,419	769	2,842	302	2,526	--	7,980	--
Saline County								
Pine	33	--	25	--	--	--	3	5
Total softwoods	33	--	25	--	--	--	3	5
Oak	474	1	398	--	--	18	25	32
Hickory	8	--	--	--	--	2	--	6
Elm	1	--	--	--	--	--	--	1
Ash	178	--	113	--	32	--	33	--
Sycamore	169	--	169	--	--	--	--	--
Cottonwood	1	--	--	--	--	--	--	1
Black cherry	138	--	113	--	--	--	--	25
Mixed hardwoods	825	--	--	564	130	1	130	--
Total hardwoods	1,794	1	793	564	162	21	188	65
All species	1,827	1	818	564	162	21	191	70

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Union County								
Redcedar	272	--	--	272	--	--	--	--
Total softwoods	272	--	--	272	--	--	--	--
Oak	5,356	--	1,933	894	494	525	1,508	2
Hickory	1,378	--	241	452	185	107	387	6
Maple	204	--	--	--	152	2	50	--
Elm	542	--	147	--	43	--	352	--
Ash	966	--	134	454	125	66	186	1
Hackberry	212	--	--	--	159	--	53	--
Black cherry	5	--	1	--	2	--	1	1
Yellow-poplar	1	--	--	--	1	--	--	--
Boxelder	127	--	127	--	--	--	--	--
Locust	1	--	1	--	--	--	--	--
Sassafras	272	--	--	272	--	--	--	--
Mixed hardwoods	754	--	--	10	452	--	292	--
Total hardwoods	9,818	--	2,584	2,082	1,613	700	2,829	10
All species	10,090	--	2,584	2,354	1,613	700	2,829	10
White County								
Oak	722	--	24	--	12	--	686	--
Hickory	694	--	3	--	--	--	691	--
Maple	86	--	1	--	--	--	85	--
Ash	536	--	5	446	--	--	85	--
Black cherry	9	--	9	--	--	--	--	--
Locust	5	--	5	--	--	--	--	--
Sassafras	2	--	1	--	--	--	1	--
Mixed hardwoods	212	--	--	118	--	--	94	--
All species	2,266	--	48	564	12	--	1,642	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Williamson County				
Oak	2,348	14	368	1,109	357	--	471	29
White oak	104	--	104	--	--	--	--	--
Red oak	104	--	104	--	--	--	--	--
Hickory	329	--	104	168	--	--	12	45
Maple	1,005	390	493	49	--	--	73	--
Elm	138	1	104	--	--	--	23	10
Ash	714	--	354	353	--	--	1	6
Birch	16	--	--	--	--	--	16	--
Black cherry	350	--	9	--	163	--	172	6
Other cherry	130	--	130	--	--	--	--	--
Sassafras	17	--	8	--	--	--	9	--
Mixed hardwoods	2,277	--	--	408	186	--	1,683	--
Other hardwoods	94	94	--	--	--	--	--	--
All species	7,626	499	1,778	2,087	706	--	2,460	96

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

SOUTHERN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
	All Counties							
Pine	34	--	26	--	--	--	3	5
Redcedar	272	--	--	272	--	--	--	--
Total softwoods	306	--	26	272	--	--	3	5
Oak	37,588	860	10,291	6,996	5,245	749	13,363	84
White oak	703	--	164	--	485	--	54	--
Red oak	1,307	--	224	--	971	--	112	--
Hickory	11,340	277	3,464	1,128	2,241	275	3,879	76
Pecan hickory	292	--	37	--	--	169	86	--
Maple	4,482	391	742	202	747	2	2,398	--
Elm	2,374	3	846	18	167	--	1,329	11
Ash	10,601	88	3,312	2,681	1,302	469	2,732	17
Sycamore	404	--	190	--	7	--	207	--
Cottonwood	1	--	--	--	--	--	--	1
Hackberry	213	1	--	--	159	--	53	--
Birch	16	--	--	--	--	--	16	--
Sweet gum	81	--	81	--	--	--	--	--
Blackgum	14	--	14	--	--	--	--	--
Black cherry	1,256	3	423	315	165	2	314	34
Other cherry	130	--	130	--	--	--	--	--
Black walnut	564	--	--	--	--	564	--	--
Yellow-poplar	4	--	--	--	1	2	--	1
Boxelder	127	--	127	--	--	--	--	--
Locust	77	4	8	7	1	--	57	--
Black locust	3	--	--	--	2	--	1	--
Honeylocust	3	--	--	--	--	2	--	1
Sassafras	1,186	--	132	410	465	3	175	1
Apple	42	--	--	4	--	--	38	--
Mixed hardwoods	15,358	264	4,531	3,521	1,249	3	4,662	1,128
Other hardwoods	97	94	--	--	2	1	--	--
Total hardwoods	88,263	1,985	24,716	15,282	13,209	2,241	29,476	1,354
All species	88,569	1,985	24,742	15,554	13,209	2,241	29,479	1,359

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Bond County								
Oak	2,273	--	9	1,086	677	423	78	--
Hickory	594	--	2	254	338	--	--	--
Basswood	169	--	--	--	169	--	--	--
Maple	271	--	--	--	70	141	60	--
Elm	86	--	1	--	85	--	--	--
Ash	1,045	--	28	310	645	--	62	--
Hackberry	40	--	21	19	--	--	--	--
Black cherry	249	--	2	--	239	--	8	--
Sassafras	169	--	--	--	169	--	--	--
Mixed hardwoods	1,934	--	326	917	677	--	14	--
Other hardwoods	127	--	--	--	--	--	127	--
All species	6,957	--	389	2,586	3,069	564	349	--
Calhoun County								
Oak	173	--	--	126	--	--	47	--
Hickory	25	--	--	25	--	--	--	--
Elm	20	--	--	20	--	--	--	--
Mixed hardwoods	519	--	--	--	--	519	--	--
All species	737	--	--	171	--	519	47	--
Clark County								
Oak	4,704	190	859	451	1,543	607	1,054	--
White oak	149	--	--	--	104	30	15	--
Hickory	1,597	66	393	226	288	395	229	--
Maple	477	10	255	--	--	212	--	--
Ash	3,454	--	2,995	226	116	--	117	--
Black cherry	629	19	490	--	60	--	60	--
Locust	3,666	--	2,538	--	564	--	564	--
Sassafras	1,340	32	962	226	60	--	60	--
Mixed hardwoods	646	--	--	--	177	45	424	--
All species	16,662	317	8,492	1,129	2,912	1,289	2,523	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Clay County								
Pine	43	--	--	--	13	--	30	--
Total softwoods	43	--	--	--	13	--	30	--
Oak	960	--	300	269	126	--	265	--
Hickory	275	--	74	55	57	--	89	--
Maple	44	--	44	--	--	--	--	--
Ash	178	--	76	38	32	--	32	--
Mixed hardwoods	926	--	57	--	--	--	869	--
Total hardwoods	2,383	--	551	362	215	--	1,255	--
All species	2,426	--	551	362	228	--	1,285	--
Clinton County								
Oak	1,724	--	8	97	340	484	795	--
Hickory	127	--	3	5	23	37	59	--
Maple	24	--	--	--	--	12	12	--
Elm	29	--	3	--	2	12	12	--
Ash	1,666	47	10	193	--	735	681	--
Hackberry	34	--	--	--	7	17	10	--
Birch	37	--	--	--	7	19	11	--
Black cherry	74	--	1	1	23	12	37	--
Locust	159	--	1	28	61	57	12	--
Mulberry	15	--	--	--	15	--	--	--
Osage-orange	368	--	--	--	15	88	265	--
Mixed hardwoods	1,685	--	--	--	--	330	1,355	--
All species	5,942	47	26	324	493	1,803	3,249	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
					Rural woodlands			
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Standing live trees	Logging waste	Dead trees	Other sources
				Crawford County				
Oak	10,799	--	4,127	1,489	4,202	--	981	--
Hickory	2,081	3	310	403	1,133	--	232	--
Maple	505	10	185	310	--	--	--	--
Elm	466	--	--	310	156	--	--	--
Ash	2,808	--	1,063	279	1,247	--	219	--
Black cherry	674	19	370	155	130	--	--	--
Sassafras	649	32	617	--	--	--	--	--
Osage-orange	705	--	--	--	564	--	141	--
Other hardwoods	242	--	87	155	--	--	--	--
All species	18,929	64	6,759	3,101	7,432	--	1,573	--
				Cumberland County				
Oak	1,076	--	--	131	350	--	595	--
Hickory	805	144	144	35	94	--	388	--
Maple	558	279	279	--	--	--	--	--
Elm	340	144	170	26	--	--	--	--
Ash	364	--	--	42	83	--	239	--
Black cherry	818	279	409	130	--	--	--	--
Locust	326	--	326	--	--	--	--	--
Mulberry	208	--	104	104	--	--	--	--
Mixed hardwoods	1,833	--	--	--	1,466	--	367	--
All species	6,328	846	1,432	468	1,993	--	1,589	--
				Edwards County				
Oak	1,593	--	674	141	342	55	381	--
Hickory	507	--	490	--	--	17	--	--
Maple	931	--	914	--	--	17	--	--
Ash	85	--	68	--	--	17	--	--
Willow	85	--	68	--	--	17	--	--
Black walnut	423	--	42	--	171	19	191	--
Locust	117	--	117	--	--	--	--	--
Other hardwoods	423	--	42	--	171	19	191	--
All species	4,164	--	2,415	141	684	161	763	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Source of fuelwood				
				Effingham County				
Oak	1,853	--	26	--	--	1,480	347	--
Hickory	1,198	--	3	846	--	9	340	--
Maple	15	15	--	--	--	--	--	--
Hard maple	2	--	--	--	--	1	1	--
Elm	14	12	--	--	--	1	1	--
Ash	846	--	--	846	--	--	--	--
Cottonwood	13	13	--	--	--	--	--	--
Black cherry	6	--	2	--	--	4	--	--
Black walnut	2	--	--	--	--	1	1	--
Locust	6	--	2	--	--	4	--	--
Other hardwoods	2	--	--	--	--	1	1	--
All species	3,957	40	33	1,692	--	1,501	691	--
				Fayette County				
Oak	5,087	--	65	--	957	50	4,015	--
Red oak	760	--	760	--	--	--	--	--
Hickory	1,686	--	65	--	207	79	1,335	--
Mixed hardwoods	397	--	--	--	131	135	131	--
All species	7,930	--	890	--	1,295	264	5,481	--
				Greene County				
Oak	3,582	74	248	--	495	2,765	--	--
White oak	384	--	192	--	--	--	192	--
Hickory	2,508	20	104	--	6	2,276	102	--
Maple	869	--	391	--	96	382	--	--
Elm	711	--	355	271	--	--	85	--
Ash	441	--	132	--	117	118	74	--
Black cherry	113	--	56	--	--	--	57	--
Black walnut	34	--	17	17	--	--	--	--
Locust	215	--	107	51	--	--	57	--
Mixed hardwoods	250	14	--	109	--	--	127	--
All species	9,107	108	1,602	448	714	5,541	694	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Jersey County								
Oak	4,606	--	8	503	724	--	3,371	--
White oak	272	--	--	--	--	272	--	--
Hickory	653	--	--	1	85	182	385	--
Maple	1,721	--	--	1,481	--	--	240	--
Elm	431	--	67	68	--	--	296	--
Ash	778	--	--	1	55	454	268	--
Black walnut	9	--	4	4	--	--	1	--
Locust	25	--	12	13	--	--	--	--
Black locust	296	--	--	--	--	--	296	--
Osage-orange	519	--	--	--	156	--	363	--
Mixed hardwoods	1,692	14	141	1,128	--	--	409	--
All species	11,002	14	232	3,199	1,020	908	5,629	--
Lawrence County								
Oak	115	--	3	--	21	91	--	--
Hickory	109	--	1	--	21	87	--	--
Maple	1	--	1	--	--	--	--	--
Elm	1	--	1	--	--	--	--	--
Ash	899	--	3	--	172	668	56	--
Sassafras	584	--	29	--	55	--	500	--
Mixed hardwoods	389	--	--	389	--	--	--	--
All species	2,098	--	38	389	269	846	556	--
Macoupin County								
Oak	1,194	431	276	287	191	3	6	--
White oak	175	--	--	--	--	175	--	--
Hickory	614	--	516	48	--	50	--	--
Maple	593	222	276	--	95	--	--	--
Elm	445	22	--	423	--	--	--	--
Ash	29	--	--	--	--	26	3	--
Willow	88	88	--	--	--	--	--	--
Black cherry	387	11	276	5	95	--	--	--
Black walnut	91	88	--	--	--	1	2	--
Osage-orange	1,793	143	1,059	591	--	--	--	--
Mixed hardwoods	282	141	70	--	14	--	57	--
Other hardwoods	43	43	--	--	--	--	--	--
All species	5,734	1,189	2,473	1,354	395	255	68	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Jasper County								
Oak	1,946	--	--	--	--	--	1,946	--
Hickory	705	--	--	--	352	--	353	--
Elm	705	--	--	--	352	--	353	--
All species	3,356	--	--	--	704	--	2,652	--
Jefferson County								
Redcedar	2	--	1	1	--	--	--	--
Total softwoods	2	--	1	1	--	--	--	--
Oak	2,064	232	278	1,071	224	96	163	--
White oak	367	--	183	184	--	--	--	--
Hickory	603	100	156	278	34	12	23	--
Maple	357	19	19	43	25	236	15	--
Elm	76	19	19	19	3	6	10	--
Ash	117	17	22	37	18	9	14	--
Hackberry	76	19	19	19	3	6	10	--
Birch	113	--	--	--	--	113	--	--
Black cherry	113	--	--	--	--	113	--	--
Sassafras	21	--	--	--	17	--	4	--
Mixed hardwoods	94	--	--	--	--	--	94	--
Other hardwoods	113	--	--	--	--	113	--	--
Total hardwoods	4,114	406	696	1,651	324	704	333	--
All species	4,116	406	697	1,652	324	704	333	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
Madison County								
Pine	705	705	--	--	--	--	--	--
Redcedar	9	9	--	--	--	--	--	--
Total softwoods	714	714	--	--	--	--	--	--
Oak	5,540	867	1,019	1,714	1,320	36	583	1
White oak	458	--	186	45	--	--	227	--
Hickory	686	35	--	35	579	22	14	1
Maple	3,030	721	599	880	642	2	186	--
Soft maple	125	--	125	--	--	--	--	--
Elm	1,501	476	96	143	725	23	38	--
Ash	2,610	--	2	1,937	151	6	514	--
Sycamore	683	141	--	--	415	--	127	--
Cottonwood	618	402	83	--	89	--	44	--
Willow	94	--	--	--	89	--	5	--
Hackberry	1,188	--	128	--	1,060	--	--	--
Birch	297	--	--	--	297	--	--	--
Black cherry	408	11	--	--	327	--	70	--
Black walnut	111	--	106	--	--	--	4	1
Boxelder	186	--	--	--	186	--	--	--
Locust	464	--	65	16	288	10	85	--
Honeylocust	282	211	--	--	--	--	71	--
Osage-orange	133	--	--	13	89	19	12	--
Apple	70	35	--	35	--	--	--	--
Mixed hardwoods	4,976	1,758	1,640	827	46	--	705	--
Total hardwoods	23,460	4,657	4,049	5,645	6,303	118	2,685	3
All species	24,174	5,371	4,049	5,645	6,303	118	2,685	3

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Marion County								
Oak	1,724	10	294	28	2	1,220	170	--
Red oak	423	--	211	--	32	--	180	--
Hickory	2,266	2	355	8	467	568	866	--
Maple	776	2	76	2	--	1	695	--
Elm	111	2	104	2	--	1	2	--
Ash	503	2	111	2	--	339	49	--
Hackberry	9	2	2	2	--	1	2	--
Black cherry	2	--	--	2	--	--	--	--
Locust	24	--	--	--	--	--	24	--
Mixed hardwoods	3,145	--	155	--	530	89	2,371	--
All species	8,983	20	1,308	46	1,031	2,219	4,359	--
Monroe County								
Oak	1,636	--	55	1,284	127	--	170	--
Hickory	831	--	40	720	14	--	57	--
Maple	469	--	--	243	113	--	113	--
Elm	76	--	11	65	--	--	--	--
Black cherry	104	--	--	104	--	--	--	--
Mixed hardwoods	1,685	--	8	509	479	--	689	--
All species	4,801	--	114	2,925	733	--	1,029	--
Montgomery County								
Oak	886	--	378	--	15	--	493	--
White oak	149	--	--	--	104	30	15	--
Red oak	217	--	--	--	11	--	206	--
Hickory	193	--	186	7	--	--	--	--
Maple	265	130	--	135	--	--	--	--
Birch	65	65	--	--	--	--	--	--
Black cherry	85	--	--	--	3	--	82	--
Locust	254	--	--	--	8	--	246	--
Osage-orange	765	130	--	71	113	--	451	--
Mixed hardwoods	4,651	--	--	--	4,520	109	22	--
All species	7,530	325	564	213	4,774	139	1,515	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Richland County								
Oak	645	--	581	64	--	--	--	--
Hickory	147	--	115	32	--	--	--	--
Ash	166	--	134	32	--	--	--	--
Mixed hardwoods	1,788	--	1,255	14	--	--	519	--
All species	2,746	--	2,085	142	--	--	519	--
St Clair County								
Pine	239	--	239	--	--	--	--	--
Total softwoods	239	--	239	--	--	--	--	--
Oak	6,444	1,378	413	556	537	528	3,032	--
Hickory	3,768	380	443	354	444	412	1,735	--
Maple	639	--	47	--	118	--	474	--
Elm	1,120	688	--	55	112	--	265	--
Ash	950	480	48	97	100	--	225	--
Sycamore	564	--	564	--	--	--	--	--
Cottonwood	564	84	85	--	99	59	237	--
Willow	259	--	259	--	--	--	--	--
Hackberry	34	--	--	--	7	17	10	--
Birch	77	40	--	--	7	19	11	--
Black cherry	3	--	1	2	--	--	--	--
Black walnut	254	--	--	76	--	--	178	--
Locust	1	--	1	--	--	--	--	--
Apple	248	--	248	--	--	--	--	--
Mixed hardwoods	2,618	677	823	97	--	--	1,021	--
Other hardwoods	62	--	62	--	--	--	--	--
Total hardwoods	17,605	3,727	2,994	1,237	1,424	1,035	7,188	--
All species	17,844	3,727	3,233	1,237	1,424	1,035	7,188	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Shelby County								
Oak	4,694	6	353	564	1,348	21	2,402	--
Hickory	1,635	259	90	548	82	5	651	--
Maple	1,181	10	16	717	68	4	366	--
Elm	515	--	--	--	--	--	515	--
Ash	186	--	64	54	55	3	10	--
Cottonwood	623	31	--	592	--	--	--	--
Hackberry	273	--	16	68	130	4	55	--
Black cherry	141	--	--	--	106	--	35	--
Black walnut	6	--	--	--	--	--	6	--
Locust	169	--	16	68	68	4	13	--
Osage-orange	10	--	--	10	--	--	--	--
Mixed hardwoods	109	--	--	109	--	--	--	--
Other hardwoods	10	--	--	10	--	--	--	--
All species	9,552	306	555	2,740	1,857	41	4,053	--
Wabash County								
Oak	1,832	226	1,093	--	328	71	114	--
Hickory	2,426	--	1,213	--	1,213	--	--	--
Maple	1,025	--	340	--	342	--	343	--
Elm	143	--	29	--	57	--	57	--
Ash	10	--	--	--	--	10	--	--
Black cherry	113	--	113	--	--	--	--	--
Sassafras	60	--	60	--	--	--	--	--
Mulberry	143	--	29	--	57	--	57	--
Osage-orange	4	--	4	--	--	--	--	--
Apple	38	--	38	--	--	--	--	--
Mixed hardwoods	760	--	--	--	760	--	--	--
Other hardwoods	9	--	9	--	--	--	--	--
All species	6,563	226	2,928	--	2,757	81	571	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Washington County								
Oak	5,083	46	489	2,315	35	--	2,198	--
White oak	564	--	--	--	451	--	113	--
Hickory	3,501	3	306	2,260	338	--	594	--
Maple	85	--	--	--	--	--	85	--
Elm	1,128	--	--	--	373	--	755	--
Hackberry	608	--	608	--	--	--	--	--
Black cherry	304	--	304	--	--	--	--	--
Mixed hardwoods	2,058	--	--	--	995	--	1,063	--
All species	13,331	49	1,707	4,575	2,192	--	4,808	--
Wayne County								
Oak	6,490	--	1,682	1,960	1,949	109	790	--
Hickory	1,702	--	789	217	226	35	435	--
Maple	85	--	68	--	--	17	--	--
Elm	169	--	169	--	--	--	--	--
Ash	1,021	--	693	28	7	23	270	--
Willow	85	--	68	--	--	17	--	--
Black cherry	147	--	--	21	22	--	104	--
Mixed hardwoods	476	--	--	321	--	--	155	--
Other hardwoods	169	--	169	--	--	--	--	--
All species	10,344	--	3,638	2,547	2,204	201	1,754	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 1 continued)

Species group	Source of fuelwood							
					Rural woodlands			
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Standing live trees	Logging waste	Dead trees	Other sources
	All Counties							
Pine	987	705	239	--	13	--	30	--
Redcedar	11	9	1	1	--	--	--	--
Total softwoods	998	714	240	1	13	--	30	--
Oak	78,723	3,460	13,238	14,136	15,853	8,039	23,996	1
White oak	2,518	--	561	229	659	507	562	--
Red oak	1,400	--	971	--	43	--	386	--
Hickory	31,242	1,012	5,798	6,357	6,001	4,186	7,887	1
Basswood	169	--	--	--	169	--	--	--
Maple	13,921	1,418	3,510	3,811	1,569	1,024	2,589	--
Hard maple	2	--	--	--	--	1	1	--
Soft maple	125	--	125	--	--	--	--	--
Elm	8,087	1,363	1,025	1,402	1,865	43	2,389	--
Ash	18,156	546	5,449	4,122	2,798	2,408	2,833	--
Sycamore	1,247	141	564	--	415	--	127	--
Cottonwood	1,818	530	168	592	188	59	281	--
Willow	611	88	395	--	89	34	5	--
Hackberry	2,262	21	794	108	1,207	45	87	--
Birch	589	105	--	--	311	151	22	--
Black cherry	4,370	339	2,024	420	1,005	129	453	--
Black walnut	930	88	169	97	171	21	383	1
Boxelder	186	--	--	--	186	--	--	--
Locust	5,426	--	3,185	176	989	75	1,001	--
Black locust	296	--	--	--	--	--	296	--
Honeylocust	282	211	--	--	--	--	71	--
Sassafras	2,823	64	1,668	226	301	--	564	--
Mulberry	366	--	133	104	72	--	57	--
Osage-orange	4,297	273	1,063	685	937	107	1,232	--
Apple	356	35	286	35	--	--	--	--
Mixed hardwoods	32,913	2,604	4,475	4,420	9,795	1,227	10,392	--
Other hardwoods	1,200	43	369	165	171	133	319	--
Total hardwoods	214,315	12,341	45,970	37,085	44,794	18,189	55,933	3
All species	215,313	13,055	46,210	37,086	44,807	18,189	55,963	3

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Adams County								
Pine	369	--	109	--	--	--	260	--
Redcedar	167	--	141	--	--	--	26	--
Total softwoods	536	--	250	--	--	--	286	--
Oak	8,943	849	3,038	3,361	255	491	949	--
Hickory	1,534	2	1	954	218	210	149	--
Maple	439	270	--	169	--	--	--	--
Elm	2,110	--	718	1,153	5	--	234	--
Ash	280	--	--	232	2	--	46	--
Willow	180	--	180	--	--	--	--	--
Birch	574	574	--	--	--	--	--	--
Black cherry	141	--	141	--	--	--	--	--
Black walnut	216	--	1	--	193	--	22	--
Boxelder	186	--	--	--	--	--	186	--
Locust	221	--	110	111	--	--	--	--
Mulberry	71	--	71	--	--	--	--	--
Osage-orange	560	100	353	107	--	--	--	--
Mixed hardwoods	1,103	--	1,002	47	9	--	45	--
Other hardwoods	843	843	--	--	--	--	--	--
Total hardwoods	17,401	2,638	5,615	6,134	682	701	1,631	--
All species	17,937	2,638	5,865	6,134	682	701	1,917	--
Boone County								
Oak	2,407	5	2	832	7	4	1,557	--
Hickory	769	1	--	91	--	--	677	--
Maple	325	--	--	325	--	--	--	--
Elm	529	--	--	--	--	--	529	--
Ash	166	160	--	1	--	1	4	--
Birch	4	--	--	--	1	--	3	--
Black cherry	117	1	--	106	2	1	7	--
Black walnut	226	--	--	--	--	--	226	--
Apple	7	--	--	1	1	1	4	--
Mixed hardwoods	72	72	--	--	--	--	--	--
All species	4,622	239	2	1,356	11	7	3,007	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Brown County								
Oak	330	--	--	213	18	18	81	--
Hickory	169	--	162	3	2	2	--	--
Maple	338	--	331	3	2	2	--	--
Elm	56	--	--	56	--	--	--	--
Ash	67	--	--	57	--	--	10	--
Cottonwood	56	--	--	28	14	14	--	--
Black cherry	11	--	--	1	--	--	10	--
Black walnut	71	--	71	--	--	--	--	--
Black locust	141	--	141	--	--	--	--	--
Mixed hardwoods	778	--	--	--	--	--	778	--
All species	2,017	--	705	361	36	36	879	--
Bureau County								
Oak	1,494	--	--	84	17	--	1,393	--
White oak	22	--	--	22	--	--	--	--
Hickory	56	--	--	--	--	--	56	--
Maple	289	--	--	--	--	--	289	--
Elm	135	--	--	--	--	--	135	--
Willow	56	--	--	--	--	--	56	--
Black cherry	6	--	--	6	--	--	--	--
Black walnut	135	--	--	--	--	--	135	--
Boxelder	113	--	--	56	11	--	46	--
Osage-orange	846	--	--	423	85	--	338	--
Apple	42	--	--	--	--	--	42	--
All species	3,194	--	--	591	113	--	2,490	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Carroll County								
Oak	716	--	--	118	479	--	119	--
Hickory	38	--	--	19	--	--	19	--
Maple	107	--	--	64	--	--	43	--
Willow	56	--	--	--	56	--	--	--
Black cherry	21	--	--	10	--	--	11	--
Black walnut	49	--	--	10	28	--	11	--
Mulberry	3	--	--	3	--	--	--	--
Apple	24	--	--	13	--	--	11	--
Mixed hardwoods	423	--	--	--	--	--	423	--
All species	1,437	--	--	237	563	--	637	--
Cass County								
Oak	720	--	--	106	--	50	564	--
Hickory	11	--	--	--	10	--	1	--
Maple	13	--	--	--	--	12	1	--
Elm	35	--	--	35	--	--	--	--
Black walnut	1	--	--	--	--	1	--	--
Locust	99	--	--	--	89	--	10	--
Mixed hardwoods	1,100	--	--	--	--	--	1,100	--
All species	1,979	--	--	141	99	63	1,676	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Champaign County				
Pine	97	97	--	--	--	--	--	--
Redcedar	30	30	--	--	--	--	--	--
Total softwoods	127	127	--	--	--	--	--	--
Oak	874	324	6	533	--	--	11	--
Basswood	50	--	50	--	--	--	--	--
Maple	808	658	150	--	--	--	--	--
Elm	1,330	1,090	141	34	--	--	65	--
Ash	153	--	--	153	--	--	--	--
Sycamore	201	4	67	--	--	--	130	--
Cottonwood	769	44	--	725	--	--	--	--
Willow	55	55	--	--	--	--	--	--
Hackberry	165	35	--	130	--	--	--	--
Birch	73	73	--	--	--	--	--	--
Black cherry	163	33	--	130	--	--	--	--
Other cherry	59	59	--	--	--	--	--	--
Black walnut	390	--	--	390	--	--	--	--
Locust	295	295	--	--	--	--	--	--
Osage-orange	2,179	--	1,654	469	--	--	56	--
Apple	80	80	--	--	--	--	--	--
Mixed hardwoods	1,520	130	6	852	--	--	532	--
Other hardwoods	67	67	--	--	--	--	--	--
Total hardwoods	9,231	2,947	2,074	3,416	--	--	794	--
All species	9,358	3,074	2,074	3,416	--	--	794	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Christian County								
Oak	2,142	--	159	1,284	--	48	651	--
White oak	442	288	--	--	108	31	15	--
Hickory	71	--	--	--	--	--	71	--
Maple	59	--	--	--	--	--	59	--
Willow	279	279	--	--	--	--	--	--
Hackberry	564	--	--	--	--	--	564	--
Black walnut	1,036	279	109	13	--	--	635	--
Locust	212	--	53	--	--	16	143	--
Mixed hardwoods	935	--	--	--	372	46	517	--
All species	5,740	846	321	1,297	480	141	2,655	--
Coles County								
Oak	1,613	163	--	--	216	1,037	197	--
Hickory	389	--	--	--	194	--	195	--
Maple	353	--	--	--	7	346	--	--
Black cherry	54	54	--	--	--	--	--	--
Black walnut	71	--	--	--	35	--	36	--
Osage-orange	338	--	338	--	--	--	--	--
Mixed hardwoods	1,438	--	--	616	--	822	--	--
Other hardwoods	71	--	--	--	35	--	36	--
All species	4,327	217	338	616	487	2,205	464	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Cook County				
Pine	1,511	569	5	--	--	--	937	--
Total softwoods	1,511	569	5	--	--	--	937	--
Oak	69,683	15,886	17,022	1,246	2	--	35,526	1
Hickory	18,914	2,481	205	105	9,552	--	6,571	--
Basswood	379	379	--	--	--	--	--	--
Maple	30,360	20,213	1,241	801	3,991	--	4,114	--
Elm	8,393	8,380	13	--	--	--	--	--
Ash	2,293	18	--	--	--	--	2,275	--
Cottonwood	7,194	4,920	--	--	--	--	2,274	--
Willow	1,657	926	--	--	--	--	731	--
Birch	534	534	--	--	--	--	--	--
Black cherry	3,165	1,231	739	455	--	--	740	--
Black walnut	4	1	1	1	1	--	--	--
Boxelder	716	14	--	--	--	--	702	--
Osage-orange	13	--	13	--	--	--	--	--
Apple	290	290	--	--	--	--	--	--
Mixed hardwoods	12,227	11,023	--	--	749	--	455	--
Total hardwoods	155,822	66,296	19,234	2,608	14,295	--	53,388	1
All species	157,333	66,865	19,239	2,608	14,295	--	54,325	1

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks, fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
De Kalb County								
Oak	3,141	21	344	--	19	--	2,757	--
Hickory	359	--	312	--	--	--	47	--
Maple	365	270	--	--	10	--	85	--
Soft maple	31	--	31	--	--	--	--	--
Elm	55	55	--	--	--	--	--	--
Ash	31	--	31	--	--	--	--	--
Willow	71	--	71	--	--	--	--	--
Black cherry	177	11	71	--	10	--	85	--
Black walnut	55	55	--	--	--	--	--	--
Mixed hardwoods	908	8	838	62	--	--	--	--
Other hardwoods	141	--	141	--	--	--	--	--
All species	5,334	420	1,839	62	39	--	2,974	--
De Witt County								
Oak	3	--	--	3	--	--	--	--
Maple	26	--	--	26	--	--	--	--
Osage-orange	3	--	--	3	--	--	--	--
Mixed hardwoods	1,241	--	56	733	--	--	452	--
All species	1,273	--	56	765	--	--	452	--
Douglas County								
Oak	257	--	--	7	54	--	196	--
Hickory	215	--	--	--	54	--	161	--
Ash	85	--	--	--	--	--	85	--
Sassafras	6	--	--	3	--	--	3	--
Osage-orange	592	--	--	--	237	--	355	--
Mixed hardwoods	10	--	--	--	--	--	--	10
All species	1,165	--	--	10	345	--	800	10

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Dupage County				
Oak	9,619	8,201	1,395	2	2	--	18	1
Hickory	5	2	1	1	1	--	--	--
Maple	826	780	15	15	12	--	4	--
Elm	10,804	2,587	1,393	--	4,093	--	2,731	--
Ash	6,368	6,368	--	--	--	--	--	--
Cottonwood	1	1	--	--	--	--	--	--
Willow	1	1	--	--	--	--	--	--
Black cherry	2	2	--	--	--	--	--	--
Black walnut	4	1	1	1	1	--	--	--
Mixed hardwoods	1,549	1,532	--	--	17	--	--	--
All species	29,179	19,475	2,805	19	4,126	--	2,753	1
				Edgar County				
Oak	393	--	--	--	--	--	393	--
Maple	1,544	--	--	--	288	--	1,256	--
Cottonwood	1,049	--	--	--	--	--	1,049	--
Black cherry	203	--	11	3	47	--	142	--
Black walnut	582	--	--	--	47	--	535	--
Sassafras	51	--	41	10	--	--	--	--
Osage-orange	191	--	5	--	46	--	140	--
Apple	582	--	--	--	47	--	535	--
Mixed hardwoods	144	--	2	1	--	--	141	--
All species	4,739	--	59	14	475	--	4,191	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Ford County								
Oak	508	254	--	--	127	--	127	--
Hickory	338	169	--	--	84	--	85	--
Maple	121	8	113	--	--	--	--	--
Elm	3	3	--	--	--	--	--	--
Ash	8	8	--	--	--	--	--	--
Hackberry	1	1	--	--	--	--	--	--
Mixed hardwoods	217	--	--	--	--	--	217	--
All species	1,196	443	113	--	211	--	429	--
Fulton County								
Pine	11	--	--	1	--	10	--	--
Total softwoods	11	--	--	1	--	10	--	--
Oak	4,466	414	776	606	566	574	1,237	293
Red oak	282	--	--	--	282	--	--	--
Hickory	316	--	3	6	69	124	114	--
Maple	1,446	130	750	73	93	89	278	33
Elm	1,623	218	750	9	59	125	462	--
Ash	18	--	--	--	5	--	13	--
Cottonwood	261	130	--	--	33	--	98	--
Willow	156	--	3	5	29	30	89	--
Black cherry	286	65	3	5	45	30	138	--
Black walnut	501	65	--	1	1	10	424	--
Locust	186	130	--	--	--	--	56	--
Black locust	2,075	--	--	--	622	--	1,453	--
Mulberry	130	130	--	--	--	--	--	--
Mixed hardwoods	595	65	--	141	39	27	323	--
Total hardwoods	12,341	1,347	2,285	846	1,843	1,009	4,685	326
All species	12,352	1,347	2,285	847	1,843	1,019	4,685	326

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Grundy County				
Oak	4,814	232	560	48	2,319	--	1,655	--
Hickory	2,466	38	136	3	2,251	--	38	--
Maple	912	--	78	--	--	--	834	--
Elm	443	362	--	--	--	--	81	--
Ash	2,507	29	--	--	2,251	--	227	--
Cottonwood	282	282	--	--	--	--	--	--
Hackberry	6,140	--	6,140	--	--	--	--	--
Black cherry	85	42	--	--	--	--	43	--
Boxelder	19	--	19	--	--	--	--	--
Osage-orange	400	--	400	--	--	--	--	--
Apple	19	--	19	--	--	--	--	--
Mixed hardwoods	649	--	--	--	--	--	649	--
All species	18,736	985	7,352	51	6,821	--	3,527	--
				Hancock County				
Oak	12,803	--	1,613	34	9,395	995	766	--
Hickory	3,110	98	1,511	116	883	288	214	--
Maple	1,166	201	277	206	69	12	401	--
Elm	451	--	45	6	96	261	43	--
Ash	2,196	--	32	5	2,145	7	7	--
Black cherry	511	53	296	53	87	11	11	--
Locust	272	--	--	272	--	--	--	--
Osage-orange	3,518	--	3,116	272	--	--	130	--
Mixed hardwoods	141	--	--	--	--	--	141	--
All species	24,168	352	6,890	964	12,675	1,574	1,713	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Henderson County				
Oak	1,407	1	305	708	160	67	166	--
Hickory	262	--	160	25	39	19	19	--
Maple	123	--	91	8	12	6	6	--
Elm	328	--	55	222	13	17	21	--
Ash	81	--	49	8	12	6	6	--
Cottonwood	6	--	6	--	--	--	--	--
Hackberry	56	--	--	50	--	2	4	--
Black cherry	677	--	--	--	338	--	339	--
Boxelder	56	--	--	50	--	2	4	--
Locust	173	12	--	155	--	2	4	--
Mixed hardwoods	795	65	--	730	--	--	--	--
All species	3,964	78	666	1,956	574	121	569	--
				Henry County				
Oak	8,653	3	3,045	98	613	564	4,330	--
Maple	1,077	298	282	--	208	--	215	74
Elm	5,875	287	2,418	1,489	--	--	1,613	68
Ash	146	108	--	--	1	--	10	27
Cottonwood	7	--	7	--	--	--	--	--
Birch	1,128	--	384	372	--	--	372	--
Black cherry	161	--	107	11	--	--	--	43
Black walnut	195	1	53	--	--	--	141	--
Mulberry	56	--	28	--	--	--	--	28
Osage-orange	519	--	519	--	--	--	--	--
Apple	180	--	--	--	--	--	180	--
Mixed hardwoods	2,337	--	702	--	459	--	1,176	--
Other hardwoods	7	--	7	--	--	--	--	--
All species	20,341	697	7,552	1,970	1,281	564	8,037	240

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Iroquois County								
Pine	42	--	42	--	--	--	--	--
Total softwoods	42	--	42	--	--	--	--	--
Oak	7,091	--	2,229	3,262	362	281	957	--
Red oak	782	--	156	--	--	--	626	--
Hickory	1,301	--	63	1,115	61	--	62	--
Maple	2,415	--	1,960	455	--	--	--	--
Ash	1,115	--	292	635	--	94	94	--
Cottonwood	4,301	--	31	64	2,117	--	2,089	--
Willow	113	--	--	113	--	--	--	--
Hackberry	141	--	141	--	--	--	--	--
Birch	2,486	--	1,872	561	50	--	3	--
Black walnut	218	--	--	176	--	--	42	--
Locust	240	--	240	--	--	--	--	--
Osage-orange	308	--	39	113	--	--	156	--
Apple	2,274	--	1,819	455	--	--	--	--
Mixed hardwoods	1,149	451	395	303	--	--	--	--
Total hardwoods	23,934	451	9,237	7,252	2,590	375	4,029	--
All species	23,976	451	9,279	7,252	2,590	375	4,029	--
Jo Daviess County								
Oak	8,423	--	612	454	--	135	7,222	--
Hickory	481	--	--	15	--	135	331	--
Basswood	56	--	--	--	--	17	39	--
Maple	5,713	--	440	34	--	34	5,205	--
Elm	5,550	--	137	796	--	17	4,600	--
Ash	1,410	--	141	--	--	--	1,269	--
Birch	564	--	--	--	--	--	564	--
Black cherry	17	--	--	8	--	--	9	--
Black walnut	240	--	--	8	--	--	232	--
Black locust	454	--	--	--	--	--	454	--
Apple	64	--	47	8	--	--	9	--
Mixed hardwoods	3,070	--	437	195	--	--	2,438	--
All species	26,042	--	1,814	1,518	--	338	22,372	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Kane County								
Oak	8,438	3,972	1,358	240	2	--	2,866	--
Hickory	278	115	1	2	1	--	159	--
Maple	740	13	470	242	12	--	3	--
Elm	5,415	426	1,819	1,592	789	--	789	--
Birch	159	--	--	--	--	--	159	--
Black walnut	4	1	1	1	1	--	--	--
Boxelder	1,933	--	--	227	853	--	853	--
Mixed hardwoods	2,732	1,751	--	--	490	--	491	--
All species	19,699	6,278	3,649	2,304	2,148	--	5,320	--
Kankakee County								
Pine	4	--	2	--	--	--	2	--
Total softwoods	4	--	2	--	--	--	2	--
Oak	6,243	1,403	1,244	2,201	362	--	1,033	--
Hickory	401	38	96	127	61	--	79	--
Maple	3,139	2,575	141	282	141	--	--	--
Elm	1,520	105	994	284	--	--	137	--
Ash	515	29	1	4	423	--	58	--
Cottonwood	127	--	31	64	30	--	2	--
Birch	219	7	53	106	50	--	3	--
Black cherry	327	42	--	--	--	--	285	--
Boxelder	127	--	--	--	--	--	127	--
Osage-orange	14	--	--	--	--	--	14	--
Apple	214	--	1	4	--	--	209	--
Mixed hardwoods	8,288	599	6,998	458	56	--	177	--
Total hardwoods	21,134	4,798	9,559	3,530	1,123	--	2,124	--
All species	21,138	4,798	9,561	3,530	1,123	--	2,126	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
			Source of fuelwood					
Kendall County								
Redcedar	637	--	637	--	--	--	--	--
Total softwoods	637	--	637	--	--	--	--	--
Oak	27,537	8,641	1,909	3,616	--	--	13,371	--
Hickory	7,368	6,822	--	546	--	--	--	--
Maple	2,785	--	1,910	--	219	--	656	--
Elm	114	--	--	--	--	--	114	--
Ash	1,547	--	637	--	--	--	910	--
Willow	755	--	--	--	--	--	755	--
Black walnut	4,093	--	819	614	--	--	2,660	--
Osage-orange	1,421	--	1,421	--	--	--	--	--
Total hardwoods	45,620	15,463	6,696	4,776	219	--	18,466	--
All species	46,257	15,463	7,333	4,776	219	--	18,466	--
Knox County								
Pine	42	13	29	--	--	--	--	--
Total softwoods	42	13	29	--	--	--	--	--
Oak	2,474	13	306	136	123	113	1,783	--
White oak	42	--	--	--	17	--	25	--
Red oak	106	--	--	--	42	--	64	--
Hickory	256	--	--	71	33	92	60	--
Maple	214	17	63	--	7	--	127	--
Elm	1,237	--	--	519	--	19	699	--
Black cherry	215	--	106	--	22	--	87	--
Black walnut	192	--	--	65	--	--	127	--
Osage-orange	28	--	22	--	6	--	--	--
Apple	254	--	106	--	21	--	127	--
Mixed hardwoods	242	--	--	217	--	--	25	--
Total hardwoods	5,260	30	603	1,008	271	224	3,124	--
All species	5,302	43	632	1,008	271	224	3,124	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Lake County								
Oak	65,635	11,478	13,838	1,155	2	82	39,080	--
Hickory	522	207	105	105	1	--	104	--
Maple	2,281	390	545	119	12	--	1,215	--
Elm	34	34	--	--	--	--	--	--
Birch	1,137	1,137	--	--	--	--	--	--
Black cherry	1,251	228	284	--	--	--	739	--
Black walnut	4	1	1	1	1	--	--	--
Boxelder	161	34	--	--	--	--	127	--
Locust	3,411	2,388	--	--	--	51	972	--
Osage-orange	14	--	--	--	--	--	14	--
Apple	114	114	--	--	--	--	--	--
Mixed hardwoods	8,555	4,991	767	227	--	72	2,498	--
All species	83,119	21,002	15,540	1,607	16	205	44,749	--
La Salle County								
Pine	84	58	7	--	--	--	19	--
Total softwoods	84	58	7	--	--	--	19	--
Oak	2,625	1,095	575	114	10	--	831	--
Hickory	28	--	--	--	--	--	28	--
Maple	2,548	98	11	2,274	--	--	165	--
Soft maple	109	109	--	--	--	--	--	--
Elm	2,885	412	84	2	17	--	2,370	--
Ash	38	--	37	1	--	--	--	--
Cottonwood	1,057	--	3	1,023	3	--	28	--
Hackberry	10	--	9	1	--	--	--	--
Black cherry	106	11	--	--	--	--	95	--
Other cherry	188	--	47	--	--	--	141	--
Black walnut	49	26	--	--	--	--	23	--
Boxelder	22	20	2	--	--	--	--	--
Honeylocust	3,701	317	2,707	--	677	--	--	--
Catalpa	846	--	677	--	169	--	--	--
Apple	22	20	2	--	--	--	--	--
Mixed hardwoods	1,939	670	23	10	443	--	793	--
Total hardwoods	16,173	2,778	4,177	3,425	1,319	--	4,474	--
All species	16,257	2,836	4,184	3,425	1,319	--	4,493	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Lee County								
Pine	22	--	--	--	--	--	22	--
Total softwoods	22	--	--	--	--	--	22	--
Oak	4,279	--	505	1,350	1,128	--	1,296	--
Hickory	156	--	156	--	--	--	--	--
Maple	285	--	279	--	--	--	6	--
Elm	186	--	--	--	--	--	186	--
Cottonwood	389	--	--	389	--	--	--	--
Black cherry	541	--	532	--	--	--	9	--
Boxelder	824	--	802	--	--	--	22	--
Locust	261	--	26	235	--	--	--	--
Mulberry	423	--	--	423	--	--	--	--
Apple	770	--	558	212	--	--	--	--
Mixed hardwoods	586	11	423	--	--	--	152	--
Total hardwoods	8,700	11	3,281	2,609	1,128	--	1,671	--
All species	8,722	11	3,281	2,609	1,128	--	1,693	--
Livingston County								
Pine	188	--	188	--	--	--	--	--
White pine	112	--	75	--	31	--	6	--
Total softwoods	300	--	263	--	31	--	6	--
Oak	1,276	141	169	128	205	--	633	--
Hickory	21	--	--	--	16	--	5	--
Maple	183	--	141	--	31	--	11	--
Elm	255	--	32	--	95	--	128	--
Ash	247	--	141	--	79	--	27	--
Cottonwood	1	--	1	--	--	--	--	--
Black walnut	57	--	38	--	16	--	3	--
Boxelder	19	--	19	--	--	--	--	--
Catalpa	1,579	--	79	158	--	--	1,342	--
Mulberry	24	--	24	--	--	--	--	--
Osage-orange	444	--	311	--	31	--	102	--
Apple	357	--	36	34	--	--	287	--
Mixed hardwoods	3,525	--	--	--	--	--	3,525	--
Total hardwoods	7,988	141	991	320	473	--	6,063	--
All species	8,288	141	1,254	320	504	--	6,069	--

(Table 1 continued on next page)

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Logan County								
Oak	658	56	104	--	--	--	498	--
Hickory	163	--	--	--	--	--	163	--
Maple	660	660	--	--	--	--	--	--
Elm	381	381	--	--	--	--	--	--
Willow	114	114	--	--	--	--	--	--
Locust	3	--	--	--	--	--	3	--
Mulberry	114	114	--	--	--	--	--	--
Osage-orange	3	--	--	--	--	--	3	--
Mixed hardwoods	94	94	--	--	--	--	--	--
Other hardwoods	5	--	5	--	--	--	--	--
All species	2,195	1,419	109	--	--	--	667	--
Macon County								
Pine	109	109	--	--	--	--	--	--
Total softwoods	109	109	--	--	--	--	--	--
Oak	1,077	337	200	230	235	--	75	--
Red oak	43	43	--	--	--	--	--	--
Hickory	47	--	--	--	23	--	24	--
Maple	928	327	96	353	90	--	62	--
Elm	641	43	312	6	85	--	195	--
Ash	184	82	--	3	49	--	50	--
Sycamore	35	--	--	--	--	--	35	--
Cottonwood	2,487	68	1,015	1,150	--	--	254	--
Willow	179	94	--	--	--	--	85	--
Black cherry	137	--	52	--	--	--	85	--
Black walnut	48	--	--	--	24	--	24	--
Boxelder	8	8	--	--	--	--	--	--
Locust	101	--	54	3	15	--	29	--
Honeylocust	141	35	--	--	106	--	--	--
Mulberry	11	11	--	--	--	--	--	--
Osage-orange	98	15	14	18	38	--	13	--
Apple	113	113	--	--	--	--	--	--
Mixed hardwoods	1,557	--	--	--	--	--	1,557	--
Other hardwoods	132	1	--	18	--	--	113	--
Total hardwoods	7,967	1,177	1,743	1,781	665	--	2,601	--
All species	8,076	1,286	1,743	1,781	665	--	2,601	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
					Rural woodlands			
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Standing live trees	Logging waste	Dead trees	Other sources
Marshall County								
Oak	631	--	63	568	--	--	--	--
Maple	22	--	22	--	--	--	--	--
Ash	140	--	8	--	132	--	--	--
Hackberry	16	--	16	--	--	--	--	--
Catalpa	132	--	--	--	132	--	--	--
All species	941	--	109	568	264	--	--	--
Mason County								
Oak	1,371	--	--	282	358	79	652	--
Hickory	692	--	--	--	69	79	544	--
Ash	85	--	--	--	42	--	43	--
Black locust	282	--	--	282	--	--	--	--
Mixed hardwoods	1,269	--	106	--	1,128	--	35	--
All species	3,699	--	106	564	1,597	158	1,274	--
McDonough County								
Oak	2,552	54	1	1,251	605	7	634	--
Red oak	521	130	--	--	274	--	117	--
Hickory	1,244	--	--	269	599	--	376	--
Maple	100	18	10	72	--	--	--	--
Hard maple	261	65	--	--	137	--	59	--
Soft maple	169	--	--	169	--	--	--	--
Elm	529	--	--	396	2	2	129	--
Hackberry	1,715	343	--	1,372	--	--	--	--
Black cherry	4	--	--	--	2	2	--	--
Locust	1,176	18	--	72	--	--	1,086	--
Black locust	747	130	1	212	280	7	117	--
Osage-orange	1,086	--	--	--	--	--	1,086	--
Other hardwoods	90	18	--	72	--	--	--	--
All species	10,194	776	12	3,885	1,899	18	3,604	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
McHenry County								
Oak	158,601	20,367	39,364	3,667	482	15,297	79,423	1
Red oak	379	--	--	--	--	189	190	--
Hickory	3,971	1,092	1,104	1,706	--	--	69	--
Maple	4,852	1,100	1,535	--	--	--	2,217	--
Elm	9,915	8,073	1,842	--	--	--	--	--
Ash	773	--	489	--	11	113	160	--
Cottonwood	2,360	--	2,314	--	--	--	46	--
Willow	959	770	75	114	--	--	--	--
Birch	68	--	--	--	--	--	68	--
Black cherry	2,441	228	569	--	15	75	1,554	--
Other cherry	1,237	--	1,237	--	--	--	--	--
Boxelder	1,054	683	246	114	11	--	--	--
Mulberry	171	--	171	--	--	--	--	--
Apple	2,811	1,510	875	426	--	--	--	--
Mixed hardwoods	18,306	1,914	4,763	1,600	--	478	9,551	--
All species	207,898	35,737	54,584	7,627	519	16,152	93,278	1
McLean County								
Oak	2,933	844	235	912	3	--	939	--
Hickory	556	154	--	154	1	--	247	--
Maple	912	502	304	138	6	--	2	--
Soft maple	94	94	--	--	--	--	--	--
Elm	247	59	2	32	1	--	153	--
Ash	602	211	8	160	2	--	221	--
Sycamore	212	212	--	--	--	--	--	--
Cottonwood	616	--	30	446	--	--	140	--
Willow	282	70	141	71	--	--	--	--
Hackberry	611	282	147	182	--	--	--	--
Black cherry	192	--	8	176	--	--	8	--
Black walnut	289	35	1	106	--	--	147	--
Yellow-poplar	7	5	--	2	--	--	--	--
Locust	65	--	--	65	--	--	--	--
Mulberry	16	10	2	3	1	--	--	--
Osage-orange	1,664	155	1,049	460	--	--	--	--
Apple	276	6	--	112	--	--	158	--
Mixed hardwoods	1,065	338	--	--	--	--	727	--
Other hardwoods	250	192	--	6	--	--	52	--
All species	10,889	3,129	1,927	3,025	14	--	2,794	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Menard County								
Oak	316	--	142	142	--	--	32	--
Maple	113	--	51	51	--	--	11	--
Elm	107	--	48	48	--	--	11	--
Hackberry	354	--	319	35	--	--	--	--
Black cherry	364	--	328	36	--	--	--	--
Black walnut	28	--	12	13	--	--	3	--
Locust	3	--	--	--	--	--	3	--
Black locust	338	--	304	34	--	--	--	--
Osage-orange	357	--	319	35	--	--	3	--
Mixed hardwoods	649	--	--	--	--	--	649	--
All species	2,629	--	1,523	394	--	--	712	--
Mercer County								
Oak	52	--	--	--	--	--	52	--
White oak	567	--	--	--	--	--	567	--
Hickory	208	--	--	--	--	--	208	--
Maple	177	88	--	--	--	--	89	--
Cottonwood	85	--	--	--	--	--	85	--
Locust	177	88	--	--	--	--	89	--
Mixed hardwoods	263	9	141	113	--	--	--	--
All species	1,529	185	141	113	--	--	1,090	--
Morgan County								
Oak	501	--	168	--	26	122	185	--
Hickory	148	--	14	--	--	79	55	--
Pecan hickory	83	--	83	--	--	--	--	--
Other hickory	279	--	--	--	--	--	279	--
Maple	1,111	--	260	--	--	--	851	--
Elm	729	--	--	--	--	18	711	--
Ash	15	--	3	--	6	6	--	--
Black cherry	35	--	--	--	--	35	--	--
Black walnut	35	--	--	--	--	35	--	--
Locust	279	--	--	--	--	--	279	--
Mixed hardwoods	1,030	--	272	--	--	--	758	--
All species	4,245	--	800	--	32	295	3,118	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Moultrie County								
Oak	254	--	--	25	23	--	206	--
Elm	65	65	--	--	--	--	--	--
Locust	19	19	--	--	--	--	--	--
Osage-orange	790	--	790	--	--	--	--	--
Mixed hardwoods	879	10	--	--	--	869	--	--
All species	2,007	94	790	25	23	869	206	--
Ogle County								
Redcedar	338	--	--	--	--	--	338	--
Total softwoods	338	--	--	--	--	--	338	--
Oak	4,958	146	181	4	7	40	4,539	41
White oak	56	--	--	56	--	--	--	--
Red oak	226	--	--	226	--	--	--	--
Hickory	1,659	42	52	338	--	--	1,213	14
Elm	1	--	1	--	--	--	--	--
Ash	6	--	--	1	--	1	4	--
Willow	71	--	71	--	--	--	--	--
Hackberry	395	--	355	--	--	--	40	--
Birch	131	113	14	--	1	--	3	--
Black cherry	253	--	223	4	2	1	23	--
Black walnut	11	--	10	--	--	--	1	--
Boxelder	1,107	--	1,107	--	--	--	--	--
Osage-orange	1	--	1	--	--	--	--	--
Apple	7	--	--	1	1	1	4	--
Mixed hardwoods	3,078	--	1,860	306	141	--	771	--
Other hardwoods	141	--	141	--	--	--	--	--
Total hardwoods	12,101	301	4,016	936	152	43	6,598	55
All species	12,439	301	4,016	936	152	43	6,936	55

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Peoria County								
Pine	13	--	--	--	8	--	5	--
Total softwoods	13	--	--	--	8	--	5	--
Oak	12,202	8,584	306	555	439	79	2,137	102
Hickory	512	278	--	--	149	79	6	--
Maple	2,478	2,408	--	34	32	--	4	--
Hard maple	268	67	--	--	--	--	201	--
Soft maple	113	--	56	--	28	--	29	--
Elm	3,596	1,170	747	388	227	--	1,064	--
Cottonwood	307	28	--	--	112	--	167	--
Hackberry	141	--	14	--	--	--	127	--
Birch	17	--	--	--	10	--	7	--
Black cherry	154	140	--	14	--	--	--	--
Black walnut	42	--	14	14	7	--	7	--
Boxelder	59	--	--	59	--	--	--	--
Locust	85	--	42	--	--	--	43	--
Osage-orange	151	--	--	68	62	--	21	--
Mixed hardwoods	1,330	372	60	192	433	--	234	39
Other hardwoods	56	56	--	--	--	--	--	--
Total hardwoods	21,511	13,103	1,239	1,324	1,499	158	4,047	141
All species	21,524	13,103	1,239	1,324	1,507	158	4,052	141
Piatt County								
Oak	847	--	--	287	3	179	378	--
Hickory	469	--	--	152	--	96	221	--
Maple	364	--	--	54	197	--	113	--
Elm	618	564	--	54	--	--	--	--
Cottonwood	54	--	--	54	--	--	--	--
Willow	54	--	--	54	--	--	--	--
Black walnut	282	--	--	--	--	--	282	--
Osage-orange	760	--	760	--	--	--	--	--
Mixed hardwoods	25	--	25	--	--	--	--	--
All species	3,473	564	785	655	200	275	994	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Pike County								
Oak	7,953	249	2,582	1,404	383	1,235	2,100	--
Hickory	163	1	15	--	2	13	132	--
Elm	1,990	--	282	34	16	243	1,415	--
Black walnut	26	--	--	--	5	--	21	--
Locust	163	81	--	--	--	41	41	--
Osage-orange	226	--	--	--	56	--	170	--
All species	10,521	331	2,879	1,438	462	1,532	3,879	--
Putnam County								
Oak	28	--	--	--	5	--	23	--
White oak	3,666	--	--	--	733	--	2,933	--
Maple	3	--	--	--	1	--	2	--
Elm	3	--	--	--	1	--	2	--
Ash	1	--	--	--	--	--	1	--
All species	3,701	--	--	--	740	--	2,961	--
Rock Island County								
Pine	268	268	--	--	--	--	--	--
Total softwoods	268	268	--	--	--	--	--	--
Oak	3,009	1,227	767	--	--	--	1,015	--
Hickory	96	--	11	--	--	--	85	--
Maple	1,048	426	--	--	--	--	622	--
Elm	113	113	--	--	--	--	--	--
Birch	50	14	18	--	--	--	18	--
Black cherry	160	113	29	--	--	--	18	--
Other cherry	423	--	--	--	--	--	423	--
Black walnut	56	56	--	--	--	--	--	--
Boxelder	903	903	--	--	--	--	--	--
Locust	177	88	--	--	--	--	89	--
Black locust	42	--	--	--	--	--	42	--
Mulberry	39	39	--	--	--	--	--	--
Mixed hardwoods	3,348	2,988	78	--	282	--	--	--
Total hardwoods	9,464	5,967	903	--	282	--	2,312	--
All species	9,732	6,235	903	--	282	--	2,312	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Sangamon County								
Pine	21	--	--	--	--	--	21	--
Total softwoods	21	--	--	--	--	--	21	--
Oak	2,569	1,058	469	169	150	60	663	--
Hickory	154	120	--	14	--	20	--	--
Maple	984	412	276	14	--	--	282	--
Elm	1,514	227	--	--	246	--	1,041	--
Ash	13	--	--	--	--	10	3	--
Willow	23	23	--	--	--	--	--	--
Birch	47	--	47	--	--	--	--	--
Blackgum	31	31	--	--	--	--	--	--
Black cherry	1,179	71	280	--	375	5	448	--
Black walnut	462	109	--	--	--	--	353	--
Locust	741	118	4	--	--	5	614	--
Black locust	113	--	--	--	113	--	--	--
Mulberry	13	13	--	--	--	--	--	--
Osage-orange	1,323	132	641	54	85	--	411	--
Apple	71	71	--	--	--	--	--	--
Mixed hardwoods	1,087	157	136	24	519	--	204	47
Other hardwoods	42	--	42	--	--	--	--	--
Total hardwoods	10,366	2,542	1,895	275	1,488	100	4,019	47
All species	10,387	2,542	1,895	275	1,488	100	4,040	47
Schuyler County								
Oak	1,026	--	--	71	139	761	55	--
Hickory	217	--	--	--	108	--	109	--
Hard maple	71	--	--	71	--	--	--	--
Elm	217	--	--	--	108	--	109	--
Mixed hardwoods	130	--	130	--	--	--	--	--
All species	1,661	--	130	142	355	761	273	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
Scott County								
Oak	1,754	--	--	--	741	45	968	--
Elm	163	--	--	--	81	--	82	--
Black cherry	113	--	--	--	23	11	79	--
Black walnut	163	--	--	--	81	--	82	--
Mixed hardwoods	860	860	--	--	--	--	--	--
All species	3,053	860	--	--	926	56	1,211	--
Stark County								
Oak	331	22	--	34	--	--	275	--
Elm	183	--	--	--	--	--	183	--
Apple	28	--	--	--	--	--	28	--
Mixed hardwoods	113	--	--	--	--	--	113	--
All species	655	22	--	34	--	--	599	--
Stephenson County								
Oak	1,672	254	958	24	53	--	383	--
Hickory	43	--	--	4	--	--	39	--
Maple	652	--	282	290	18	--	62	--
Elm	2,849	226	367	2,256	--	--	--	--
Willow	217	--	--	--	--	--	217	--
Hackberry	39	39	--	--	--	--	--	--
Black cherry	492	45	226	2	--	--	219	--
Black walnut	4	--	--	2	--	--	2	--
Apple	4	--	--	2	--	--	2	--
All species	5,972	564	1,833	2,580	71	--	924	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Tazewell County				
Pine	169	169	--	--	--	--	--	--
Total softwoods	169	169	--	--	--	--	--	--
Oak	7,037	1,227	736	19	1,108	--	3,947	--
Hickory	2,390	8	--	--	485	--	1,897	--
Maple	873	472	3	--	1	--	397	--
Hard maple	14	3	--	--	--	--	11	--
Soft maple	592	--	592	--	--	--	--	--
Elm	2,440	471	434	--	317	--	1,218	--
Ash	2,435	80	161	--	569	--	1,625	--
Cottonwood	423	423	--	--	--	--	--	--
Hackberry	592	--	169	--	106	--	317	--
Birch	451	--	--	--	45	--	406	--
Black cherry	63	56	5	2	--	--	--	--
Black walnut	1,193	6	2	--	273	--	912	--
Locust	2,495	--	268	--	427	--	1,800	--
Osage-orange	630	--	17	1	119	--	493	--
Apple	56	56	--	--	--	--	--	--
Mixed hardwoods	1,797	883	553	49	66	--	246	--
Other hardwoods	44	31	13	--	--	--	--	--
Total hardwoods	23,525	3,716	2,953	71	3,516	--	13,269	--
All species	23,694	3,885	2,953	71	3,516	--	13,269	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
	Vermillion County							
Pine	99	98	--	--	--	--	1	--
Total softwoods	99	98	--	--	--	--	1	--
Oak	14,503	10,116	229	1,072	1,058	55	1,973	--
Hickory	12,115	8,474	--	127	--	--	3,514	--
Maple	4,153	489	106	133	696	--	2,729	--
Soft maple	304	99	53	--	106	46	--	--
Elm	315	35	35	135	71	--	39	--
Ash	1,327	46	94	879	130	176	2	--
Sycamore	5,984	5,676	--	140	65	102	1	--
Cottonwood	940	--	--	--	--	--	940	--
Hackberry	141	--	106	35	--	--	--	--
Black cherry	738	9	106	111	110	--	402	--
Black walnut	4,882	3,249	--	829	175	65	564	--
Osage-orange	4,910	2,885	247	1,203	143	--	432	--
Apple	1,038	--	--	--	110	--	928	--
Mixed hardwoods	1,750	527	--	415	189	--	619	--
Other hardwoods	195	--	--	195	--	--	--	--
Total hardwoods	53,295	31,605	976	5,274	2,853	444	12,143	--
All species	53,394	31,703	976	5,274	2,853	444	12,144	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
			Warren County					
Oak	1,734	--	66	--	778	--	890	--
Hickory	1,872	434	--	--	587	--	851	--
Maple	313	109	24	--	180	--	--	--
Elm	1	--	1	--	--	--	--	--
Black cherry	87	--	--	--	87	--	--	--
Locust	1,246	--	--	--	1,246	--	--	--
Osage-orange	28	--	22	--	6	--	--	--
Mixed hardwoods	326	--	--	--	--	--	326	--
All species	5,607	543	113	--	2,884	--	2,067	--
			Whiteside County					
Pine	141	--	141	--	--	--	--	--
Total softwoods	141	--	141	--	--	--	--	--
Oak	1,746	--	252	73	2	51	1,346	22
Maple	22	--	--	--	--	--	--	22
Soft maple	9	--	--	7	--	--	2	--
Elm	163	--	141	--	--	--	--	22
Ash	3	--	--	--	--	3	--	--
Cottonwood	78	--	56	--	--	--	--	22
Hackberry	107	--	--	64	2	--	19	22
Black cherry	21	--	9	--	--	3	9	--
Locust	109	--	--	--	--	--	--	109
Apple	47	47	--	--	--	--	--	--
Mixed hardwoods	1,234	--	649	217	--	--	368	--
Other hardwoods	282	--	282	--	--	--	--	--
Total hardwoods	3,821	47	1,389	361	4	57	1,744	219
All species	3,962	47	1,530	361	4	57	1,744	219

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Will County				
Pine	114	--	--	114	--	--	--	--
Total softwoods	114	--	--	114	--	--	--	--
Oak	116,377	49,308	29,056	13,635	1,179	--	23,198	1
Hickory	6,306	2,275	3,457	228	1	--	345	--
Basswood	68	68	--	--	--	--	--	--
Maple	38,644	20,663	3,155	1,427	745	--	12,654	--
Elm	11,984	68	8,812	2,558	--	--	546	--
Ash	2,639	1	1,501	--	--	--	1,137	--
Sycamore	1,137	1,137	--	--	--	--	--	--
Cottonwood	1,750	--	1,136	--	--	--	614	--
Willow	883	16	136	--	--	--	731	--
Hackberry	2,048	1	2,047	--	--	--	--	--
Birch	228	--	--	228	--	--	--	--
Black cherry	4,422	1,820	--	--	682	--	1,920	--
Other cherry	4,082	2,956	1,126	--	--	--	--	--
Black walnut	4	1	1	1	1	--	--	--
Boxelder	716	14	--	--	--	--	702	--
Locust	1,516	1,516	--	--	--	--	--	--
Catalpa	23,876	4,548	--	--	5,798	--	13,530	--
Mulberry	228	228	--	--	--	--	--	--
Osage-orange	9,922	273	6,752	441	--	--	2,456	--
Apple	300	91	--	--	--	--	209	--
Mixed hardwoods	19,635	11,535	4,985	1,103	2,012	--	--	--
Total hardwoods	246,765	96,519	62,164	19,621	10,418	--	58,042	1
All species	246,879	96,519	62,164	19,735	10,418	--	58,042	1

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
			Winnebago County					
Pine	786	1	101	35	59	--	590	--
Red pine	217	--	217	--	--	--	--	--
Total softwoods	1,003	1	318	35	59	--	590	--
Oak	19,404	1,411	4,641	2,167	4,591	141	6,453	--
Hickory	2,178	204	237	18	691	9	976	43
Basswood	99	--	99	--	--	--	--	--
Maple	2,837	1,324	874	140	162	--	337	--
Elm	6,038	1,644	1,351	410	349	9	2,232	43
Ash	725	150	296	138	14	--	127	--
Cottonwood	2,188	32	564	32	23	152	623	762
Willow	1,042	--	876	111	19	--	36	--
Hackberry	494	18	345	19	19	--	93	--
Birch	564	564	--	--	--	--	--	--
Black cherry	2,600	49	1,766	295	363	--	127	--
Other cherry	292	--	233	--	20	--	39	--
Black walnut	484	--	--	141	69	141	133	--
Boxelder	358	21	296	31	2	--	8	--
Honeylocust	47	--	--	--	9	--	38	--
Mulberry	6	--	--	--	6	--	--	--
Osage-orange	292	--	263	29	--	--	--	--
Apple	72	32	7	33	--	--	--	--
Mixed hardwoods	1,366	461	466	179	--	--	260	--
Total hardwoods	41,086	5,910	12,314	3,743	6,337	452	11,482	848
All species	42,089	5,911	12,632	3,778	6,396	452	12,072	848

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Woodford County				
Pine	114	--	--	--	68	--	46	--
Total softwoods	114	--	--	--	68	--	46	--
Oak	14,219	141	953	1,777	23	--	11,325	--
Hickory	4,686	--	--	1,128	46	--	3,512	--
Maple	263	34	212	--	--	--	17	--
Elm	719	--	--	423	178	--	118	--
Ash	5,076	--	--	--	--	--	5,076	--
Cottonwood	113	--	22	57	--	--	34	--
Willow	38	--	--	--	--	--	38	--
Hackberry	22	22	--	--	--	--	--	--
Birch	152	--	--	--	91	--	61	--
Black cherry	130	--	--	--	76	--	54	--
Black walnut	622	--	--	564	--	--	58	--
Locust	445	--	5	--	423	--	17	--
Osage-orange	7	--	7	--	--	--	--	--
Apple	3	--	--	--	--	--	3	--
Mixed hardwoods	521	96	--	141	195	--	89	--
Total hardwoods	27,016	293	1,199	4,090	1,032	--	20,402	--
All species	27,130	293	1,199	4,090	1,100	--	20,448	--

(Table 1 continued on next page)

Table 1.--Fuelwood production from roundwood by Unit, county, species group, and source, Illinois, 1983

(In standard cords)

PRAIRIE UNIT

(Table 1 continued)

Species group	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
			All Counties					
Pine	4,204	1,382	624	150	135	10	1,903	--
Red pine	217	--	217	--	--	--	--	--
White pine	112	--	75	--	31	--	6	--
Redcedar	1,172	30	778	--	--	--	364	--
Total softwoods	5,705	1,412	1,694	150	166	10	2,273	--
Oak	649,322	148,497	132,483	50,307	28,834	22,610	266,129	462
White oak	4,795	288	--	78	858	31	3,540	--
Red oak	2,339	173	156	226	598	189	997	--
Hickory	79,723	23,055	7,802	7,442	16,291	1,245	23,831	57
Pecan hickory	83	--	83	--	--	--	--	--
Other hickory	279	--	--	--	--	--	279	--
Basswood	652	447	149	--	--	17	39	--
Maple	122,509	54,913	16,498	7,802	7,242	501	35,424	129
Hard maple	614	135	--	71	137	--	271	--
Soft maple	1,421	302	732	176	134	46	31	--
Elm	94,887	27,098	22,974	12,937	6,849	711	24,185	133
Ash	33,295	7,290	3,921	2,277	5,873	417	13,490	27
Sycamore	7,569	7,029	67	140	65	102	166	--
Cottonwood	26,901	5,928	5,216	4,032	2,332	166	8,443	784
Willow	7,241	2,348	1,553	468	104	30	2,738	--
Hackberry	13,752	741	9,808	1,888	127	2	1,164	22
Birch	8,586	3,016	2,388	1,267	248	--	1,667	--
Blackgum	31	31	--	--	--	--	--	--
Black cherry	21,822	4,304	5,891	1,428	2,286	174	7,696	43
Other cherry	6,281	3,015	2,643	--	20	--	603	--
Black walnut	17,024	3,886	1,135	2,951	959	252	7,841	--
Yellow-poplar	7	5	--	2	--	--	--	--
Boxelder	8,381	1,697	2,491	537	877	2	2,777	--
Locust	14,170	4,753	802	913	2,200	115	5,278	109
Black locust	4,192	130	446	528	1,015	7	2,066	--
Honeylocust	3,889	352	2,707	--	792	--	38	--
Catalpa	26,433	4,548	756	158	6,099	--	14,872	--
Sassafras	57	--	41	13	--	--	3	--
Mulberry	1,305	545	296	429	7	--	--	28
Osage-orange	33,636	3,560	19,073	3,696	914	--	6,393	--
Apple	10,119	2,430	3,470	1,301	180	2	2,736	--
Mixed hardwoods	119,980	41,612	25,873	8,931	7,599	2,314	33,555	96
Other hardwoods	2,366	1,208	631	291	35	--	201	--
Total hardwoods	1,323,661	353,336	270,085	110,289	92,675	28,933	466,453	1,890
All species	1,329,366	354,748	271,779	110,439	92,841	28,943	468,726	1,890

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, deerwood, pear, etc.

(In standard cords)

ALL UNITS

Species group 1/	Source of fuelwood							
	All sources	Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
	All Counties							
Pine	5,225	2,087	889	150	148	10	1,936	5
Red pine	217	--	217	--	--	--	--	--
White pine	112	--	75	--	31	--	6	--
Redcedar	1,455	39	779	273	--	--	364	--
Total softwoods	7,009	2,126	1,960	423	179	10	2,306	5
Oak	765,633	152,817	156,012	71,439	49,932	31,398	303,488	547
White oak	8,016	288	725	307	2,002	538	4,156	--
Red oak	5,046	173	1,351	226	1,612	189	1,495	--
Hickory	122,305	24,344	17,064	14,927	24,533	5,706	35,597	134
Pecan hickory	375	--	120	--	--	169	86	--
Other hickory	279	--	--	--	--	--	279	--
Basswood	821	447	149	--	169	17	39	--
Maple	140,912	56,722	20,750	11,815	9,558	1,527	40,411	129
Hard maple	616	135	--	71	137	1	272	--
Soft maple	1,546	302	857	176	134	46	31	--
Elm	105,348	28,464	24,845	14,357	8,881	754	27,903	144
Ash	62,052	7,924	12,682	9,080	9,973	3,294	19,055	44
Sycamore	9,220	7,170	821	140	487	102	500	--
Cottonwood	28,720	6,458	5,384	4,624	2,520	225	8,724	785
Willow	7,852	2,436	1,948	468	193	64	2,743	--
Hackberry	16,227	763	10,602	1,996	1,493	47	1,304	22
Birch	9,191	3,121	2,388	1,267	559	151	1,705	--
Sweet gum	81	--	81	--	--	--	--	--
Blackgum	45	31	14	--	--	--	--	--
Black cherry	27,448	4,646	8,338	2,163	3,456	305	8,463	77
Other cherry	6,411	3,015	2,773	--	20	--	603	--
Black walnut	18,518	3,974	1,304	3,048	1,130	837	8,224	1
Yellow-poplar	11	5	--	2	1	2	--	1
Boxelder	8,694	1,697	2,618	537	1,063	2	2,777	--
Locust	19,673	4,757	3,995	1,096	3,190	190	6,336	109
Black locust	4,491	130	446	528	1,017	7	2,363	--
Honeylocust	4,174	563	2,707	--	792	2	109	1
Catalpa	26,433	4,548	756	158	6,099	--	14,872	--
Sassafras	4,066	64	1,841	649	766	3	742	1
Mulberry	1,671	545	429	533	79	--	57	28
Osage-orange	37,933	3,833	20,136	4,381	1,851	107	7,625	--
Apple	10,517	2,465	3,756	1,340	180	2	2,774	--
Mixed hardwoods	168,251	44,480	34,879	16,872	18,643	3,544	48,609	1,224
Other hardwoods 2/	3,663	1,345	1,000	456	208	134	520	--
Total hardwoods	1,626,239	367,662	340,771	162,656	150,678	49,363	551,862	3,247
All species	1,633,248	369,788	342,731	163,079	150,857	49,373	554,168	3,252

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 2.--Fuelwood production from roundwood by Unit, species group, and ownership, Illinois, 1983

(In standard cords)

ALL UNITS

Species group 1/	All ownerships	Federal		Indian	State	County and municipal	Forest industry	Other private
		National forest	Other					
				All Counties				
Pine	5,225	--	264	--	875	114	--	3,972
Red pine	217	--	--	--	--	--	--	217
White pine	112	--	--	--	--	--	--	112
Redcedar	1,455	--	--	--	--	--	--	1,455
Total softwoods	7,009	--	264	--	875	114	--	5,756
Oak	765,633	13	3,007	--	426	17,783	764	743,640
White oak	8,016	--	--	--	--	--	--	8,016
Red oak	5,046	--	--	--	--	--	--	5,046
Hickory	122,305	8	57	--	90	1,986	14	120,150
Pecan hickory	375	--	--	--	--	--	--	375
Other hickory	279	--	--	--	--	--	--	279
Basswood	821	--	--	--	--	--	--	821
Maple	140,912	--	106	--	141	12,705	--	127,960
Hard maple	616	--	--	--	--	--	--	616
Soft maple	1,546	--	--	--	--	--	--	1,546
Elm	105,348	--	--	--	141	3,148	--	102,059
Ash	62,052	5	--	--	196	226	6	61,619
Sycamore	9,220	--	--	--	--	--	--	9,220
Cottonwood	28,720	--	--	--	22	675	--	28,023
Willow	7,852	--	--	--	--	--	--	7,852
Hackberry	16,227	--	--	--	--	366	34	15,827
Birch	9,191	--	--	--	--	315	38	8,838
Sweet gum	81	--	--	--	--	--	--	81
Blackgum	45	--	--	--	--	--	--	45
Black cherry	27,448	--	--	--	79	999	--	26,370
Other cherry	6,411	--	--	--	141	--	--	6,270
Black walnut	18,518	--	--	--	--	109	--	18,409
Yellow-poplar	11	--	--	--	--	--	--	11
Boxelder	8,694	--	--	--	--	--	--	8,694
Locust	19,673	--	--	--	--	198	--	19,475
Black locust	4,491	--	--	--	--	--	--	4,491
Honeylocust	4,174	--	--	--	--	--	--	4,174
Catalpa	26,433	--	--	--	--	--	--	26,433
Sassafras	4,066	--	--	--	79	--	--	3,987
Mulberry	1,671	--	--	--	6	--	--	1,665
Osage-orange	37,933	--	2,456	--	--	592	130	34,755
Apple	10,517	--	--	--	--	71	--	10,446
Mixed hardwoods	168,251	1,046	79	--	755	272	68	166,031
Other hardwoods 2/	3,663	--	--	--	--	18	--	3,645
Total hardwoods	1,626,239	1,072	5,705	--	2,076	39,463	1,054	1,576,869
All species	1,633,248	1,072	5,969	--	2,951	39,577	1,054	1,582,625

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 2.--Fuelwood production from roundwood by Unit, species group, and ownership, Illinois, 1983

(In standard cords)

(Table 2 continued)

SOUTHERN UNIT

Species group	All ownerships	Federal		Indian	State	County and municipal	Forest industry	Other private
		National forest	Other					
				All Counties				
Pine	34	--	--	--	--	--	--	34
Redcedar	272	--	--	--	--	--	--	272
Total softwoods	306	--	--	--	--	--	--	306
Oak	37,588	13	993	--	--	578	33	35,971
White oak	703	--	--	--	--	--	--	703
Red oak	1,307	--	--	--	--	--	--	1,307
Hickory	11,340	8	57	--	--	192	14	11,069
Pecan hickory	292	--	--	--	--	--	--	292
Maple	4,482	--	--	--	--	389	--	4,093
Elm	2,374	--	--	--	--	--	--	2,374
Ash	10,601	5	--	--	--	--	6	10,590
Sycamore	404	--	--	--	--	--	--	404
Cottonwood	1	--	--	--	--	--	--	1
Hackberry	213	--	--	--	--	--	--	213
Birch	16	--	--	--	--	--	--	16
Sweet gum	81	--	--	--	--	--	--	81
Blackgum	14	--	--	--	--	--	--	14
Black cherry	1,256	--	--	--	--	--	--	1,256
Other cherry	130	--	--	--	--	--	--	130
Black walnut	564	--	--	--	--	--	--	564
Yellow-poplar	4	--	--	--	--	--	--	4
Boxelder	127	--	--	--	--	--	--	127
Locust	77	--	--	--	--	--	--	77
Black locust	3	--	--	--	--	--	--	3
Honeylocust	3	--	--	--	--	--	--	3
Sassafras	1,186	--	--	--	--	--	--	1,186
Apple	42	--	--	--	--	--	--	42
Mixed hardwoods	15,358	1,046	79	--	--	--	--	14,233
Other hardwoods	97	--	--	--	--	--	--	97
Total hardwoods	88,263	1,072	1,129	--	--	1,159	53	84,850
All species	88,569	1,072	1,129	--	--	1,159	53	85,156

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 2.--Fuelwood production from roundwood by Unit, species group, and ownership, Illinois, 1983

(In standard cords)

CLAYPAN UNIT

(Table 2 continued)

Species group	All ownerships	Federal		Indian	State	County and municipal	Forest industry	Other private
		National forest	Other					
	All Counties							
Pine	987	--	--	--	--	--	--	987
Redcedar	11	--	--	--	--	--	--	11
Total softwoods	998	--	--	--	--	--	--	998
Oak	78,723	--	6	--	153	1,777	212	76,575
White oak	2,518	--	--	--	--	--	--	2,518
Red oak	1,400	--	--	--	--	--	--	1,400
Hickory	31,242	--	--	--	--	1,777	--	29,465
Basswood	169	--	--	--	--	--	--	169
Maple	13,921	--	--	--	--	130	--	13,791
Hard maple	2	--	--	--	--	--	--	2
Soft maple	125	--	--	--	--	--	--	125
Elm	8,087	--	--	--	--	--	--	8,087
Ash	18,156	--	--	--	153	--	--	18,003
Sycamore	1,247	--	--	--	--	--	--	1,247
Cottonwood	1,818	--	--	--	--	395	--	1,423
Willow	611	--	--	--	--	--	--	611
Hackberry	2,262	--	--	--	--	--	34	2,228
Birch	589	--	--	--	--	65	38	486
Black cherry	4,370	--	--	--	79	--	--	4,291
Black walnut	930	--	--	--	--	--	--	930
Boxelder	186	--	--	--	--	--	--	186
Locust	5,426	--	--	--	--	--	--	5,426
Black locust	296	--	--	--	--	--	--	296
Honeylocust	282	--	--	--	--	--	--	282
Sassafras	2,823	--	--	--	79	--	--	2,744
Mulberry	366	--	--	--	--	--	--	366
Osage-orange	4,297	--	--	--	--	130	--	4,167
Apple	356	--	--	--	--	--	--	356
Mixed hardwoods	32,913	--	--	--	282	--	68	32,563
Other hardwoods	1,200	--	--	--	--	--	--	1,200
Total hardwoods	214,315	--	6	--	746	4,274	352	208,937
All species	215,313	--	6	--	746	4,274	352	209,935

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

(In standard cords)

PRAIRIE UNIT

(Table 2 continued)

Species group	All ownerships	Federal		Indian	State	County and municipal	Forest industry	Other private
		National forest	Other					
				All Counties				
Pine	4,204	--	264	--	875	114	--	2,951
Red pine	217	--	--	--	--	--	--	217
White pine	112	--	--	--	--	--	--	112
Redcedar	1,172	--	--	--	--	--	--	1,172
Total softwoods	5,705	--	264	--	875	114	--	4,452
Oak	649,322	--	2,008	--	273	15,428	519	631,094
White oak	4,795	--	--	--	--	--	--	4,795
Red oak	2,339	--	--	--	--	--	--	2,339
Hickory	79,723	--	--	--	90	17	--	79,616
Pecan hickory	83	--	--	--	--	--	--	83
Other hickory	279	--	--	--	--	--	--	279
Basswood	652	--	--	--	--	--	--	652
Maple	122,509	--	106	--	141	12,186	--	110,076
Hard maple	614	--	--	--	--	--	--	614
Soft maple	1,421	--	--	--	--	--	--	1,421
Elm	94,887	--	--	--	141	3,148	--	91,598
Ash	33,295	--	--	--	43	226	--	33,026
Sycamore	7,569	--	--	--	--	--	--	7,569
Cottonwood	26,901	--	--	--	22	280	--	26,599
Willow	7,241	--	--	--	--	--	--	7,241
Hackberry	13,752	--	--	--	--	366	--	13,386
Birch	8,586	--	--	--	--	250	--	8,336
Blackgum	31	--	--	--	--	--	--	31
Black cherry	21,822	--	--	--	--	999	--	20,823
Other cherry	6,281	--	--	--	141	--	--	6,140
Black walnut	17,024	--	--	--	--	109	--	16,915
Yellow-poplar	7	--	--	--	--	--	-	7
Boxelder	8,381	--	--	--	--	--	--	8,381
Locust	14,170	--	--	--	--	198	--	13,972
Black locust	4,192	--	--	--	--	--	--	4,192
Honeylocust	3,889	--	--	--	--	--	--	3,889
Catalpa	26,433	--	--	--	--	--	--	26,433
Sassafras	57	--	--	--	-	--	--	57
Mulberry	1,305	--	--	--	6	--	--	1,299
Osage-orange	33,636	--	2,456	--	--	462	130	30,588
Apple	10,119	--	--	--	--	71	--	10,048
Mixed hardwoods	119,980	--	--	--	473	272	--	119,235
Other hardwoods	2,366	--	--	--	--	18	--	2,348
Total hardwoods	1,323,661	--	4,570	--	1,330	34,030	649	1,283,082
All species	1,329,366	--	4,834	--	2,205	34,144	649	1,287,534

1/ As reported by fuelwood producers before prorating to individual species.

2/ Includes species such as Chinese elm, persimmon, butternut, hawthorn, dogwood, pear, etc.

Table 3.-- Fuelwood production from roundwood by Unit, county, and species group, Illinois, 1983

(In standard cords)

County	All species	Species group								
		Pine	Red-cedar	Ash	Basswood	Gum	Black cherry	Cottonwood	Elm	Pecan hickor
SOUTHERN UNIT										
Alexander	4	--	--	--	--	--	--	--	--	--
Franklin	7,966	--	--	118	--	--	5	--	128	157
Gallatin	1,398	--	--	833	--	4	--	--	128	199
Hamilton	8,548	--	--	1,348	--	--	--	--	128	756
Hardin	3,747	--	--	--	--	--	--	--	--	16
Jackson	7,032	--	--	204	--	--	2	--	254	234
Johnson	1,656	1	--	153	--	--	--	--	--	71
Massac	837	--	--	18	--	99	--	--	34	102
Perry	5,649	--	--	41	--	--	73	--	110	194
Pope	4,229	--	--	1,367	--	--	--	--	--	193
Pulaski	11,275	--	--	2,188	--	--	633	--	346	1,177
Randolph	14,419	--	--	3,142	--	--	159	--	748	1,148
Saline	1,827	33	--	380	--	--	237	2	1	5
Union	10,090	--	272	1,038	--	--	6	--	600	583
White	2,266	--	--	572	--	--	9	--	--	303
Williamson	7,626	--	--	802	--	--	781	--	188	155
Total	88,569	34	272	12,204	--	103	1,905	2	2,665	5,293
CLAYPAN UNIT										
Bond	6,957	--	--	1,546	217	--	328	--	115	327
Calhoun	737	--	--	--	--	--	--	--	68	33
Clark	16,662	--	--	3,485	--	--	645	--	--	654
Clay	2,426	43	--	259	--	--	--	--	--	189
Clinton	5,942	--	--	2,317	--	--	103	--	41	69
Crawford	18,929	--	--	2,808	--	--	674	--	466	811
Cumberland	6,328	--	--	667	--	--	818	--	340	461
Edwards	4,164	--	--	85	--	--	--	--	--	198
Effingham	3,957	--	--	846	--	--	6	13	14	468
Fayette	7,930	--	--	--	--	--	--	--	--	712
Greene	9,107	--	--	457	--	--	126	--	817	989
Jasper	3,356	--	--	--	--	--	--	352	353	275
Jefferson	4,116	--	2	123	--	--	113	--	80	238
Jersey	11,002	--	--	801	--	--	--	--	596	267
Lawrence	2,098	--	--	1,104	--	--	--	--	1	52
Macoupin	5,734	--	--	45	--	--	400	--	448	246
Madison	24,174	705	9	3,127	--	--	442	936	1,899	281
Marion	8,983	--	--	590	--	--	2	--	127	1,508
Monroe	4,801	--	--	--	--	--	126	--	91	440
Montgomery	7,530	--	--	--	--	--	142	--	--	78
Richland	2,746	--	--	462	--	--	--	--	--	158
St. Clair	17,844	239	--	1,119	--	--	3	654	1,322	1,692
Shelby	9,552	--	--	188	--	--	141	648	515	647
Wabash	6,563	--	--	10	--	--	113	--	165	1,126
Washington	13,331	--	--	--	--	--	304	--	1,652	1,541
Wayne	10,344	--	--	1,051	--	--	160	--	169	692
Total	215,313	987	11	21,090	217	--	4,646	2,603	9,279	14,152

(Table 3 continued on next page)

ble 3 continued)

PRAIRIE UNIT

County	All species	Species group								
		Pine	Red-cedar	Ash	Basswood	Gum	Black cherry	Cottonwood	Elm	Pecan hickory
dams	17,937	369	167	283	--	--	172	--	2,282	434
oone	4,622	--	--	235	--	--	117	--	529	216
rown	2,017	--	--	144	--	--	88	56	56	48
ureau	3,194	--	--	--	--	--	6	--	135	16
arroll	1,437	--	--	--	--	--	43	--	--	21
ass	1,979	--	--	--	--	--	--	--	35	4
hampaign	9,358	97	30	204	50	--	208	1,012	1,523	--
hristian	5,740	--	--	--	--	--	--	--	--	26
oles	4,327	--	--	--	--	--	66	--	--	133
ook	157,333	1,511	--	2,317	455	--	3,416	8,195	10,064	5,598
e Kalb	5,334	--	--	62	--	--	249	--	57	187
e Witt	1,273	--	--	--	--	--	--	--	--	--
ouglas	1,165	--	--	86	--	--	--	--	--	61
u Page	29,179	--	--	6,912	--	--	2	1	11,042	1
dgar	4,739	--	--	--	--	--	208	1,085	--	--
ord	1,196	--	--	8	--	--	--	--	3	119
ulton	12,352	11	--	19	--	--	302	275	1,675	93
rundy	18,736	--	--	2,558	--	--	95	282	461	693
ancock	24,168	--	--	2,197	--	--	512	--	455	876
enderson	3,964	--	--	86	--	--	677	6	460	77
enry	20,341	--	--	149	--	--	172	8	6,399	--
roquois	23,976	42	--	1,178	--	--	--	4,390	--	385
o Daviess	26,042	--	--	1,610	61	--	19	--	6,274	147
ane	19,699	--	--	--	--	--	--	--	5,894	94
ankakee	21,138	4	--	550	--	--	359	224	4,306	195
endall	46,257	--	637	1,547	--	--	--	--	114	2,063
nox	5,302	42	--	--	--	--	216	--	1,386	77
ake	83,119	--	--	--	--	--	1,381	--	45	172
a Salle	16,257	84	--	38	--	--	129	1,068	3,537	10
ee	8,722	22	--	--	--	--	622	390	205	50
ivingston	8,288	300	--	284	--	--	--	1	433	7
ogan	2,195	--	--	--	--	--	--	--	408	46
acon	8,076	109	--	268	--	--	279	2,912	967	24
arshall	941	--	--	140	--	--	--	--	--	--
ason	3,699	--	--	191	--	--	--	--	--	253
cDonough	10,194	--	--	--	--	--	4	--	529	348
cHenry	207,898	--	--	841	--	--	2,687	2,586	10,548	1,288
cLean	10,889	--	--	709	--	--	195	667	310	186
enard	2,629	--	--	--	--	--	364	--	220	--
ercer	1,529	--	--	--	--	--	--	102	--	69
organ	4,245	--	--	17	--	--	35	--	957	174
oultrie	2,007	--	--	--	--	--	--	--	116	--
gle	12,439	--	338	7	--	--	490	--	2	568
eoria	21,524	13	--	--	--	--	160	365	3,899	163
iatt	3,473	--	--	--	--	--	--	54	623	132
ike	10,521	--	--	--	--	--	--	--	1,990	46
utnam	3,701	--	--	1	--	--	--	--	3	--
ock Island	9,732	268	--	--	--	--	283	--	231	28
angamon	10,387	21	--	13	--	33	1,437	--	1,725	47
chuyler	1,661	--	--	--	--	--	--	--	236	66
cott	3,053	--	--	--	--	--	157	--	227	--
tark	655	--	--	--	--	--	--	--	226	--
tephenson	5,972	--	--	--	--	--	492	--	2,849	12
azewell	23,694	169	--	2,539	--	--	85	555	2,716	683
ermillion	53,394	99	--	1,415	--	--	778	990	335	3,489
arren	5,607	--	--	--	--	--	87	--	1	569
hiteside	3,962	141	--	3	--	--	36	157	363	--
ill	246,879	114	--	2,770	77	--	4,832	1,849	12,914	1,941
innebago	42,089	1,003	--	760	103	--	2,692	2,229	6,302	624
oodford	27,130	114	--	5,099	--	--	148	115	776	1,331
Total	1,329,366	4,533	1,172	35,240	746	33	24,300	29,574	106,843	23,890
te total	1,633,248	5,554	1,455	68,534	963	136	30,851	32,179	118,787	43,335

(Table 3 continued on next page)

(Table 3 continued)

County	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sycamore	Black walnut	Yellow poplar	Other hardwoods
				Species group					
SOUTHERN UNIT									
Alexander	1	--	--	2	1	--	--	--	--
Franklin	246	30	133	3,839	2,066	--	569	--	675
Gallatin	47	--	--	68	38	4	--	--	77
Hamilton	1,185	190	863	2,609	1,469	--	--	--	--
Hardin	26	--	--	2,371	1,334	--	--	--	--
Jackson	365	28	125	3,687	2,074	5	--	3	51
Johnson	110	--	--	846	475	--	--	--	--
Massac	111	6	27	275	153	--	--	10	2
Perry	303	2	11	3,091	1,739	85	--	--	--
Pope	302	--	--	1,386	780	--	--	--	201
Pulaski	1,841	1	5	3,243	1,825	--	--	--	16
Randolph	1,626	380	1,729	3,315	1,864	159	--	--	149
Saline	8	--	--	557	314	290	--	--	--
Union	914	48	221	3,665	2,061	--	--	1	681
White	473	17	79	516	290	--	--	--	7
Williamson	241	212	963	2,513	1,460	--	--	--	311
Total	7,799	914	4,156	31,983	17,943	543	569	14	2,170
CLAYPAN UNIT									
Bond	513	56	239	1,618	1,495	--	--	--	503
Calhoun	51	--	--	304	281	--	--	--	--
Clark	1,022	92	393	2,620	2,579	--	--	--	5,172
Clay	295	9	40	828	763	--	--	--	--
Clinton	108	7	29	1,249	1,152	--	--	--	867
Crawford	1,270	96	409	5,615	5,184	--	--	--	1,596
Cumberland	721	106	452	1,158	1,071	--	--	--	534
Edwards	309	177	754	829	764	--	423	--	625
Effingham	730	5	12	964	889	--	2	--	8
Fayette	1,113	--	--	3,540	2,565	--	--	--	--
Greene	1,545	165	704	1,868	2,152	--	39	--	245
Jasper	430	--	--	1,012	934	--	--	--	--
Jefferson	374	69	294	1,106	1,389	--	--	--	328
Jersey	418	484	2,065	2,684	2,751	--	17	--	919
Lawrence	82	--	1	73	68	--	--	--	717
Macoupin	383	121	515	677	799	--	113	--	1,987
Madison	441	778	3,529	3,781	4,164	817	184	--	3,081
Marion	2,357	307	1,308	1,750	970	--	--	--	64
Monroe	688	183	779	1,297	1,197	--	--	--	--
Montgomery	122	52	223	1,046	2,578	--	--	--	3,289
Richland	247	--	--	977	902	--	--	--	--
St. Clair	2,645	139	597	3,878	3,579	778	289	--	910
Shelby	1,011	231	980	2,453	2,264	--	6	--	468
Wabash	1,761	220	935	1,018	939	--	--	--	276
Washington	2,410	21	88	2,982	3,725	--	--	--	608
Wayne	1,083	16	69	3,562	3,288	--	--	--	254
Total	22,129	3,334	14,415	48,889	48,442	1,595	1,073	--	22,451

(Table 3 continued on next page)

(ıble 3 continued)

PRAIRIE UNIT

County	Species group								
	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sycamore	Black walnut	Yellow poplar	Other hardwoods
Adams	1,114	53	387	3,285	6,374	--	220	--	2,797
Boone	554	39	286	818	1,591	--	226	--	11
Brown	121	40	298	324	630	--	71	--	141
Bureau	40	35	254	509	1,007	--	135	--	1,057
Carroll	54	23	169	323	628	--	71	--	105
Cass	9	1	14	611	1,186	--	1	--	118
Champaign	--	101	738	370	718	465	520	--	3,322
Christian	67	10	68	846	2,137	--	1,270	--	1,316
Coles	341	76	560	877	1,704	--	87	--	483
Cook	14,395	4,157	30,490	24,874	48,283	--	712	--	2,866
De Kalb	481	45	391	1,197	2,326	--	57	--	282
De Witt	--	124	910	41	79	--	--	--	119
Douglas	156	--	--	88	171	--	--	--	603
Du Page	4	106	787	3,509	6,810	--	4	--	1
Edgar	--	191	1,397	138	269	--	601	--	850
Ford	306	15	106	216	422	--	--	--	1
Fulton	236	179	1,314	1,897	3,119	--	535	--	2,697
Grundy	1,782	132	968	1,764	3,423	--	--	--	6,578
Hancock	2,253	143	1,059	4,376	8,495	--	--	--	3,802
Henderson	200	15	113	623	1,210	--	--	--	497
Henry	--	151	1,108	3,417	6,633	--	224	--	2,080
Iroquois	993	309	2,262	3,345	4,932	--	230	--	5,910
Jo Daviess	376	779	5,716	3,253	6,314	--	269	--	1,224
Kane	244	90	659	3,490	6,777	--	4	--	2,447
Kankakee	502	473	3,468	3,497	6,786	--	--	--	774
Kendall	5,305	334	2,451	9,362	18,175	--	4,093	--	2,176
Knox	198	26	189	965	1,709	--	211	--	283
Lake	443	302	2,221	24,643	47,833	--	4	--	6,075
La Salle	24	315	2,451	1,074	2,086	--	63	--	5,378
Lee	129	39	288	1,526	2,963	--	--	--	2,488
Livingston	21	24	174	733	1,422	--	61	--	4,828
Logan	117	85	622	225	437	--	--	--	255
Macon	63	124	908	452	793	94	88	--	995
Marshall	--	3	19	215	416	--	--	--	148
Mason	650	--	--	785	1,526	--	--	--	294
McDonough	896	273	257	1,389	1,684	--	--	--	4,814
McHenry	3,312	637	4,677	59,573	114,851	--	--	--	6,898
McLean	479	117	962	1,149	2,231	240	347	8	3,289
Menard	--	27	199	220	426	--	59	--	1,114
Mercer	180	26	192	22	721	--	--	--	217
Morgan	494	182	1,336	219	427	--	35	--	369
Moultrie	--	--	--	154	298	--	--	--	1,439
Ogle	1,463	--	--	2,315	3,922	--	20	--	3,314
Peoria	419	591	2,394	4,385	8,512	--	48	--	575
Piatt	340	45	322	291	562	--	284	--	820
Pike	117	--	--	2,704	5,249	--	26	--	389
Putnam	--	--	3	10	3,684	--	--	--	--
Rock Island	73	183	1,341	1,513	2,938	--	115	--	2,759
Sangamon	118	127	926	957	1,861	--	490	--	2,632
Schuyler	169	77	--	379	734	--	--	--	--
Scott	--	--	--	830	1,612	--	227	--	--
Stark	--	--	--	134	261	--	--	--	34
Stephenson	31	78	574	568	1,104	--	4	--	260
Tazewell	1,755	138	1,633	2,628	5,101	--	1,217	--	4,475
Vermillion	8,970	524	4,159	5,084	9,867	6,097	5,053	--	6,534
Warren	1,462	38	275	646	1,255	--	--	--	1,274
Whiteside	--	3	40	875	1,698	--	--	--	646
Will	4,989	5,038	36,950	43,077	83,620	1,291	4	--	47,413
Winnebago	1,604	359	2,639	6,788	13,175	--	494	--	3,317
Woodford	3,421	34	246	4,899	9,507	--	642	--	798
Total	61,470	17,036	121,970	244,477	474,684	8,187	18,822	8	156,381
ate total	91,398	21,284	140,541	325,349	541,069	10,325	20,464	22	181,002

Table 4.--Fuelwood production from roundwood by Unit, species group, and source of material, Illinois, 1983

(In standard cords)

ALL UNITS

Species	All sources	Growing stock[1]				Nongrowing stock sources					
		Total	Sawtimber		Pole-timber	Total	Tops, limb-wood[2]	Saplings[1]	Cull trees, sections[1]	Dead trees[1]	Non-forest land[3]
			Saw log portion	Upper stem							
SOFTWOODS											
Pine	5,554	116	45	28	43	5,438	44	--	29	1,005	4,360
Redcedar	1,455	--	--	--	--	1,455	--	--	--	364	1,091
Total	7,009	116	45	28	43	6,893	44	--	29	1,369	5,451
HARDWOODS											
Ash	68,534	7,791	3,560	1,067	3,164	60,743	4,764	--	1,568	19,063	35,348
Basswood	963	140	59	27	54	823	67	--	27	44	685
Gum	136	--	--	--	--	136	--	--	--	--	136
Black cherry	30,851	2,695	1,217	365	1,113	28,156	1,172	--	527	8,804	17,653
Cottonwood	32,179	1,908	861	258	789	30,271	861	--	373	7,116	21,921
Elm	118,787	6,176	2,840	827	2,509	112,611	2,768	14	1,329	31,269	77,231
Pecan hickory	43,335	4,366	1,892	745	1,729	38,969	2,944	--	865	10,976	24,184
Other hickory	91,398	8,160	3,637	1,250	3,273	83,238	5,126	15	1,541	22,528	54,028
Hard maple	21,284	805	349	160	296	20,479	441	--	123	5,575	14,340
Soft maple	140,541	3,939	1,830	527	1,582	136,602	2,326	--	835	35,206	98,235
Red oak	325,349	19,654	8,711	3,209	7,734	305,695	14,800	57	4,004	112,146	174,688
White oak	541,069	28,137	12,436	4,648	11,053	512,932	21,997	100	5,570	189,582	295,683
Sycamore	10,325	364	153	72	139	9,961	183	--	70	889	8,819
Black walnut	20,464	1,003	465	163	375	19,461	837	--	210	8,768	9,646
Yellow-poplar	22	1	1	--	--	21	2	--	--	--	19
Other hdwds.	181,002	14,493	6,806	1,688	5,999	166,509	6,230	14	3,085	47,777	109,403
Total	1,626,239	99,632	44,817	15,006	39,809	1,526,607	64,518	200	20,127	499,743	942,019
All species	1,633,248	99,748	44,862	15,034	39,852	1,533,500	64,562	200	20,156	501,112	947,470

[1] On commercial forest land.

[2] From sawtimber and poletimber on commercial forest land.

[3] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland. In addition, it includes fuelwood from all trees on rural woodland in Cook County. Rural woodland in Cook County is defined as reserved from commercial use.

Table 4 continued

SOUTHERN UNIT

Species	All sources	Growing stock 1/				Nongrowing stock sources					
		Total	Sawtimber: Saw log portion	Sawtimber: Upper stem	Poletimber	Total	Tops, limbwood 2/	Saplings 1/	Cull trees, sections 1/	Dead trees 1/	Nonforest land 3/
SOFTWOODS											
Pine	34	--	--	--	--	34	--	--	--	3	31
Redcedar	272	--	--	--	--	272	--	--	--	--	272
Total	306	--	--	--	--	306	--	--	--	3	303
HARDWOODS											
Ash	12,204	1,075	501	132	442	11,129	647	--	236	3,255	6,991
Basswood	--	--	--	--	--	--	--	--	--	--	--
Gum	103	--	--	--	--	103	--	--	--	--	103
Black cherry	1,905	153	77	15	61	1,752	61	--	31	705	955
Cottonwood	2	--	--	--	--	2	--	--	--	--	2
Elm	2,665	118	34	50	34	2,547	34	--	34	1,537	942
Pecan hickory	5,293	682	282	133	267	4,611	401	--	133	1,855	2,222
Other hickory	7,799	989	464	135	390	6,810	479	--	180	2,740	3,411
Hard maple	914	98	49	-	49	816	32	--	16	500	268
Soft maple	4,156	403	201	29	173	3,753	159	--	101	2,276	1,217
Red oak	31,983	3,097	1,439	378	1,280	28,886	1,454	--	640	10,241	16,551
White oak	17,943	1,695	781	236	678	16,248	780	--	383	5,752	9,333
Sycamore	543	30	--	30	--	513	--	--	--	225	288
Black walnut	569	154	56	56	42	415	366	--	29	15	5
Yellow-poplar	14	1	1	--	--	13	2	--	--	--	11
Other hdwds.	2,170	447	208	60	179	1,723	164	--	89	432	1,038
Total	88,263	8,942	4,093	1,254	3,595	79,321	4,579	--	1,872	29,533	43,337
All species	88,569	8,942	4,093	1,254	3,595	79,627	4,579	--	1,872	29,536	43,640

1/ On commercial forest land.

2/ From sawtimber and poletimber on commercial forest land.

3/ Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

CLAYPAN UNIT

Species	All sources	Growing stock[1/]				Nongrowing stock sources					
			Sawtimber								
		Total	Saw log portion	Upper stem	Pole-timber	Total	Tops, limb-wood [2/]	Sap-lings[1/]	Cull trees, sections[1/]	Dead trees[1/]	Non-forest land[3/]
SOFTWOODS											
Pine	987	8	4	1	3	979	3	--	2	30	944
Redcedar	11	--	--	--	--	11	--	--	--	--	11
Total	998	8	4	1	3	990	3	--	2	30	955
HARDWOODS											
Ash	21,090	2,746	1,206	465	1,075	18,344	2,455	--	538	4,011	11,340
Basswood	217	135	54	27	54	82	55	--	27	--	--
Gum	--	--	--	--	--	--	--	--	--	--	--
Black cherry	4,646	763	331	130	302	3,883	346	--	158	544	2,835
Cottonwood	2,603	356	157	57	142	2,247	171	--	71	338	1,667
Elm	9,279	1,214	549	173	492	8,065	506	--	246	2,720	4,593
Pecan hickory	14,152	2,358	1,046	383	929	11,794	1,857	--	442	3,991	5,504
Other hickory	22,129	3,696	1,632	606	1,458	18,433	2,859	15	707	6,240	8,612
Hard maple	3,334	291	127	73	91	3,043	218	--	55	739	2,031
Soft maple	14,415	1,212	534	202	476	13,203	924	--	260	3,143	8,876
Red oak	48,889	7,283	3,213	1,199	2,871	41,606	5,213	14	1,500	15,449	19,430
White oak	48,442	8,526	3,748	1,402	3,376	39,916	5,764	14	1,759	14,444	17,935
Sycamore	1,595	264	125	28	111	1,331	98	--	56	172	1,005
Black walnut	1,073	103	59	--	44	970	59	--	29	424	458
Yellow-poplar	--	--	--	--	--	--	--	--	--	--	--
Other hdwds.	22,451	4,271	1,998	521	1,752	18,180	1,969	--	912	4,186	11,113
Total	214,315	33,218	14,779	5,266	13,173	181,097	22,494	43	6,760	56,401	95,399
All species	215,313	33,226	14,783	5,267	13,176	182,087	22,497	43	6,762	56,431	96,354

[1/] On commercial forest land.

[2/] From sawtimber and poletimber on commercial forest land.

[3/] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

PRAIRIE UNIT

Species	All sources	Growing stock 1/				Nongrowing stock sources					
		Total	Sawtimber		Pole-timber	Total	Tops, limb-wood 2/	Sap-lings 1/	Cull trees, sections 1/	Dead trees 1/	Non-forest land 3/
			Saw log portion	Upper stem							
SOFTWOODS											
Pine	4,533	108	41	27	40	4,425	41	-	27	972	3,385
Redcedar	1,172	-	-	-	-	1,172	-	-	-	364	808
Total	5,705	108	41	27	40	5,597	41	-	27	1,336	4,193
HARDWOODS											
Ash	35,240	3,970	1,853	470	1,647	31,270	1,662	--	794	11,797	17,017
Basswood	746	5	5	--	--	741	12	--	--	44	685
Gum	33	--	--	--	--	33	--	--	--	--	33
Black cherry	24,300	1,779	809	220	750	22,521	765	--	338	7,555	13,863
Cottonwood	29,574	1,552	704	201	647	28,022	690	--	302	6,778	20,252
Elm	106,843	4,844	2,257	604	1,983	101,999	2,228	14	1,049	27,012	71,696
Pecan hickory	23,890	1,326	564	229	533	22,564	686	--	290	5,130	16,458
Other hickory	61,470	3,475	1,541	509	1,425	57,995	1,788	--	654	13,548	42,005
Hard maple	17,036	416	173	87	156	16,620	191	--	52	4,336	12,041
Soft maple	121,970	2,324	1,095	296	933	119,646	1,243	--	474	29,787	88,142
Red oak	244,477	9,274	4,059	1,632	3,583	235,203	8,133	43	1,864	86,456	138,707
White oak	474,684	17,916	7,907	3,010	6,999	456,768	15,453	86	3,428	169,386	268,415
Sycamore	8,187	70	28	14	28	8,117	85	--	14	492	7,526
Black walnut	18,822	746	350	107	289	18,076	412	--	152	8,329	9,183
Yellow-poplar	8	--	--	--	--	8	--	--	--	--	8
Other hdwds.	156,381	9,775	4,600	1,107	4,068	146,606	4,097	14	2,084	43,159	97,252
Total	1,323,661	57,472	25,945	8,486	23,041	1,266,189	37,445	157	11,495	413,809	803,283
All species	1,329,366	57,580	25,986	8,513	23,081	1,271,786	37,486	157	11,522	415,145	807,476

1/ On commercial forest land.

2/ From sawtimber and poletimber on commercial forest land.

3/ Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland. In addition, it includes fuelwood from all trees on rural woodland in Cook County. Rural woodland in Cook County is defined as reserved from commercial use.

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Discusses and analyzes 1983 Illinois fuelwood production from roundwood. Analyzes production by geographic areas, type of producer, species, landowner class, type of land, and tree source.

KEY WORDS: Growing stock, households, commercial producer, private land.

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The Private Forest Landowners of Michigan

Eugene M. Carpenter and Mark H. Hansen

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THE PRIVATE FOREST LANDOWNERS OF MICHIGAN

Eugene M. Carpenter, *Research Forester, Duluth, Minnesota*
and **Mark H. Hansen**, *Research Forester, St. Paul, Minnesota*

Michigan's nonindustrial privately owned forests constitute 50 percent of the total commercial forest land in the State. This valuable renewable natural resource provides a base for diversified economic activity as well as recreational and esthetic amenities vital to society's well-being. To make sound decisions relative to the development and management of these lands, agencies, firms, and individuals need a comprehensive knowledge of them.

This report addresses only nonindustrial private ownerships having from 1 acre of commercial forest land up to 9,999 acres. Lands held by forest industry and public agencies are not included, nor are private holdings of more than 10,000 acres. The results are based on a randomly selected sample of forest landowners expanded to represent all small private forest land ownerships in Michigan. This study complements recently published reports containing timber resource acreage and volume information for Michigan and its four Forest Survey Units (Spencer 1982, Smith 1982, Jakes 1982, Hahn 1982, Raile and Smith 1983) (fig. 1). The ownership information will be useful to those involved in planning and evaluating forest management programs, procuring timber and initiating industrial development, and assessing the land use objectives of this diverse ownership class.

The sample was based on a random distribution of points overlaid on aerial photographs, and thus is land- rather than owner-oriented. The ground location of each survey point was determined and the owner of record identified from the legal description at the County land department. Questionnaires were mailed to owners, and their responses provided the basis for our estimates. The questionnaire was designed to determine reasons for owning and attitudes, opinions, and actions relative to forest management, public and private recreation use, timber harvesting, benefits of ownership, and related owner and ownership characteristics.

PRIVATE FOREST OWNERSHIP

An estimated 384,700 private owners hold 8,798,400 acres of commercial forest land in Michigan (again, this does not include forest industry land or private ownerships greater than 10,000 acres). Although there are a large number of small-tract owners (54 percent of the ownerships are less than 10 acres), most of the private land is controlled by persons owning larger areas. For example, less than 1 percent of the private owners hold 500 acres or more, but their lands account for 12 percent of the total area; in contrast, the 54 percent of the owners who hold less than 10 acres collectively account for only about 8 percent of the area (table 1, fig. 2).

The average size of holding is 23 acres when all private owners are considered, but it increases to 46 acres when ownerships of less than 10 acres are omitted. The average holding varies from 12 acres in the southern Lower Peninsula (SLP) to 63 acres in the eastern Upper Peninsula (EUP). The northern Lower Peninsula (NLP) contains the most private commercial forest acreage, but the SLP has the most ownership units.

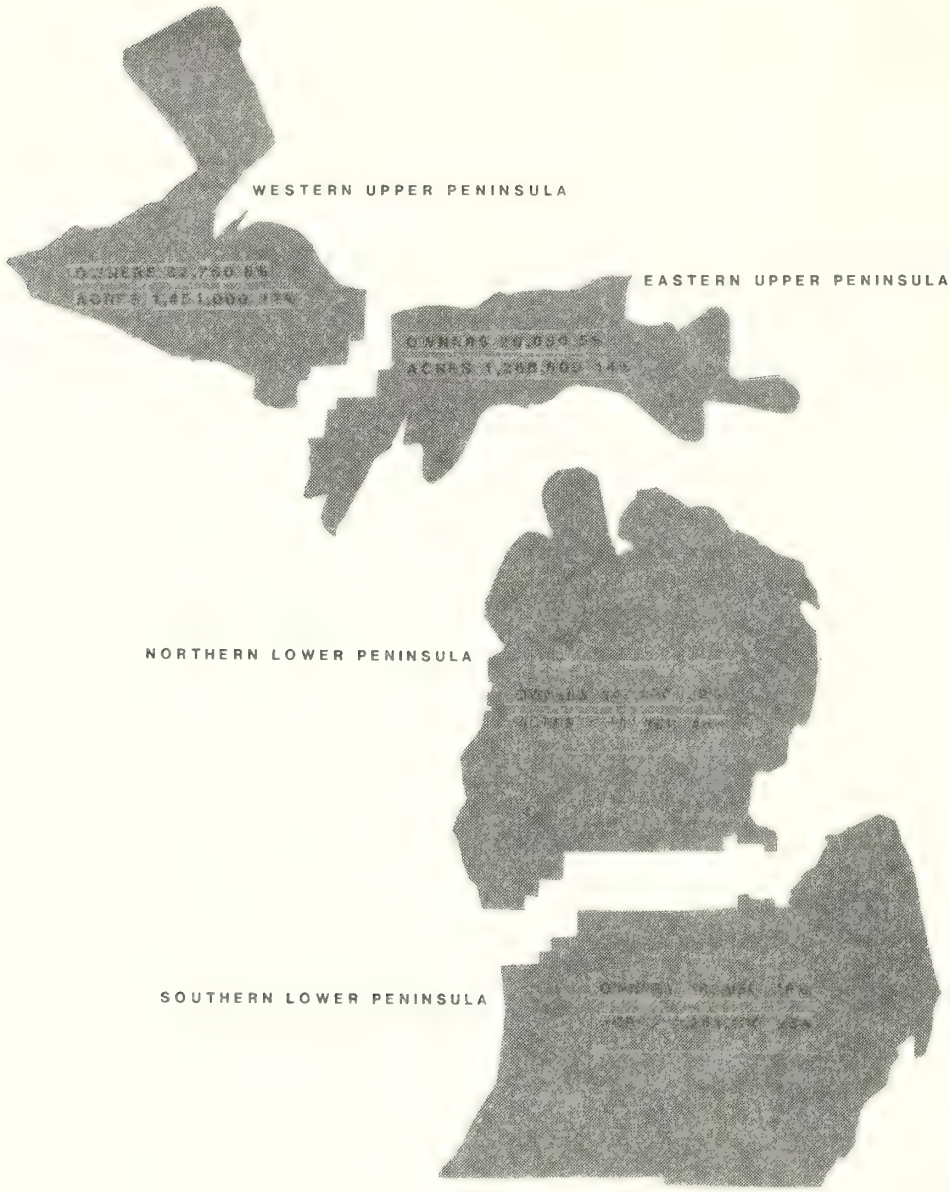


Figure 1.—*Distribution of private ownerships in Michigan by Forest Survey Unit.*

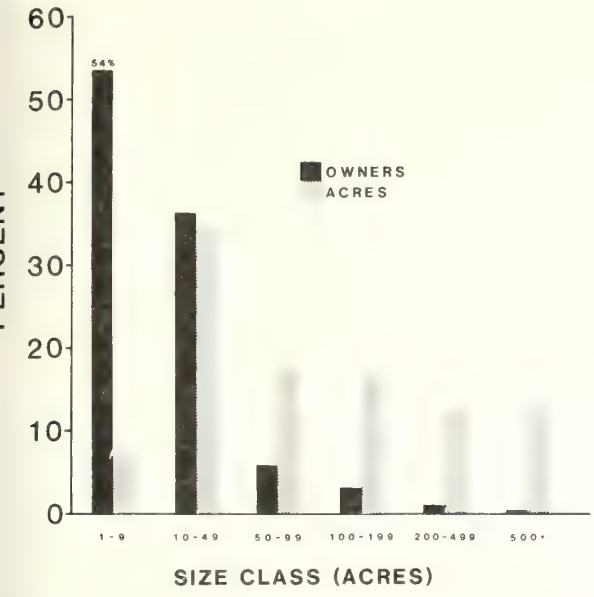
Number of Tracts

Most private owners hold only one or two tracts of forest land. Eighty percent of the owners hold only one tract, and these ownerships account for 61 percent of the forest land (table 2, fig. 3). In addition, 80 percent of multi-tract owners have only two forest tracts. Owners with land in the Upper Peninsula report having more than one tract more often than owners in the Lower Peninsula; consequently, the former have a higher proportion of their acreage in multi-tract ownerships.

Distance from Residence

The distance owners live from their forest land may influence the methods foresters use to generate interest in more intensive forest management. Owners living close to their forest land might be able to supervise, observe, or carry out practices more easily than those whose land is far from home. We classed owners as residents (living less than 25 miles from their nearest forest tract), nonresidents (living 50 miles or more from their nearest tract) and intermediate (living 25 to 49 miles from their nearest tract). A high proportion of the resident owners reported living on the forest tract or within 1 or 2 miles of it; very few holdings fell in the 25-49 mile distance, or the intermediate class (table 3).

The proportion of resident ownership was highest in the SLP (77 percent); these owners accounted for 81 percent of private land in the Unit. In the other three Units the proportions were lower: roughly 6



igure 2.—*Distribution of private ownerships by size class of ownership.*

ercent resident ownership accounting for 55 per-ent of the land area in all three (table 4, fig. 4).

)ne-Tract vs. Multi-Tract Properties

Our analysis separated those who reported owning nly one tract of forest land from those reporting two r more tracts. The distance from residence to forest s explicitly defined for one-tract ownerships, but for nulti-tract holdings the situation is not so clear.

For one-tract holdings, 71 percent of the owners re residents; they hold 57 percent of the land in this

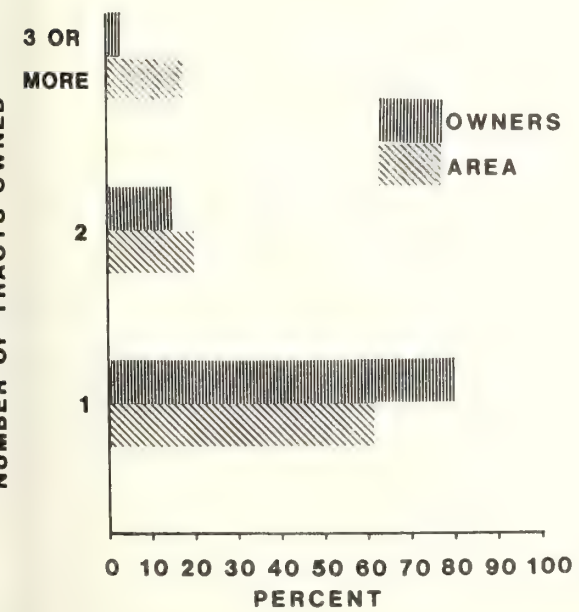


Figure 3.—*Distribution of private ownership units by number of tracts owned.*

category (table 5). Multi-tract ownerships are more difficult to analyze. Sixty-nine percent of the owners are residents and, while they hold 71 percent of the acreage in this category, the portion of the acreage close-by is not defined. When we look at distance to the farthest tract, we find that a high proportion of respondents did not answer this part of the question (table 6). Very often, respondents filled in only one distance when the distance to the nearest and farthest tract was about the same. One observation that can be drawn from the sample is that when the distance between the two tracts is considerable, the farthest tract is the largest in nearly every case.

If we ignore the 4 percent of the owners who did not tell us how many tracts they owned, we can summarize the ownership patterns as follows: 83 percent of the owners hold only one tract, accounting for 62 percent of the commercial forest area (fig. 5). Seventeen percent of the owners have more than one tract, accounting for 38 percent of the area. About one-fifth of the owners live 50 miles or more from their nearest tract, accounting for 38 percent of the forest area.

Tenure

Tenure may have considerable impact on decisions to invest in forest management. Thirty to fifty years may elapse before the benefits of thinning, pruning, or other improvements yield returns to the owner. An even longer period may be required for reforestation efforts. We estimate that about two-thirds of the individual owners have held 52 percent of the forested acres for 20 years or less (table 7). Eight percent of the individual owners did not tell us the date they acquired forest land. These data represent

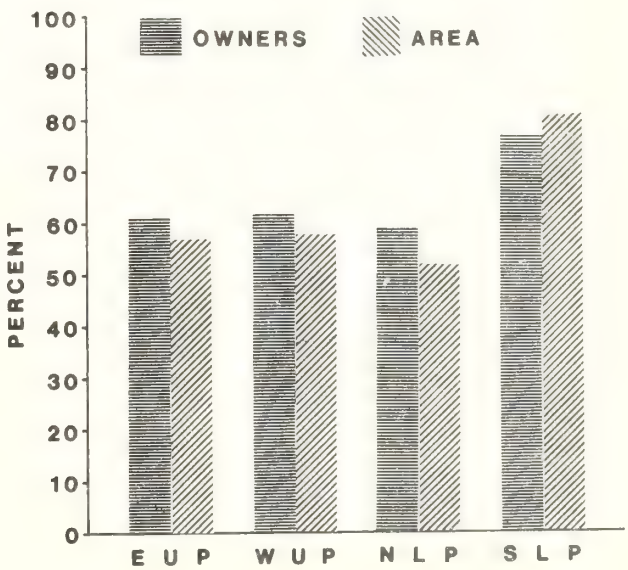


Figure 4.—*Resident ownership by Forest Survey Unit.*

a maximum tenure, in that many owners may obtain additional tracts subsequent to their initial acquisition (Carpenter 1985). The other forms of ownership show a similar pattern, except 41 percent did not answer the question. Forty-nine percent of the business and group ownership acreage has been held longer than 20 years, compared with 42 percent of the individual acreage.

FORM OF OWNERSHIP

Ninety-three percent of all private ownership units are individual, joint, or undivided estates (table 8). The latter were included here because all sampled estate units were controlled by a single decisionmaker. These estates represent an estimated 1,000 ownerships and 50,000 acres of forest land.

Collectively, individuals control 359,450 ownerships for a total of 7,815,050 acres, or 89 percent of the State's privately owned forest acreage. An estimated 12,050 partnerships hold 273,950 acres, or 3 percent of the land area. Corporations control 389,900 acres, or 4 percent of the acreage. The remaining 319,500 acres is held by clubs, associations, or trusts.

We found that 22 percent of the owners hold woo land as part of an active farm (table 9, fig. 6). T 83,150 farm ownerships contain 1,875,950 woodla acres, or 21 percent of the State's total commerci forest land. Ninety-three percent of farm ownershi are held by individuals. The remaining 6,922,4 nonfarm acres is held in 301,550 miscellaneous p vate ownerships. Of these, 93 percent are also in vidually owned.

NATURE OF BUSINESS

We found there are 19,850 nonfarm units wi 808,800 forested acres held by other than individ als (tables 10 and 11). We asked these partnershi corporations, clubs, associations, or trusts to tell about the nature of their organization. Real esta firms or those holding forest land for speculati account for 93 percent of the 8,950 nonfarm partn ships. Of the 1,500 nonfarm corporations, two-thir are oriented toward sports-recreation, perso recreation, recreation development, or youth grou Clubs and associations range from formally org nized, dues-paying memberships to informal grou who gather occasionally to hunt, fish, or for oth personal recreation. Ninety-three percent a

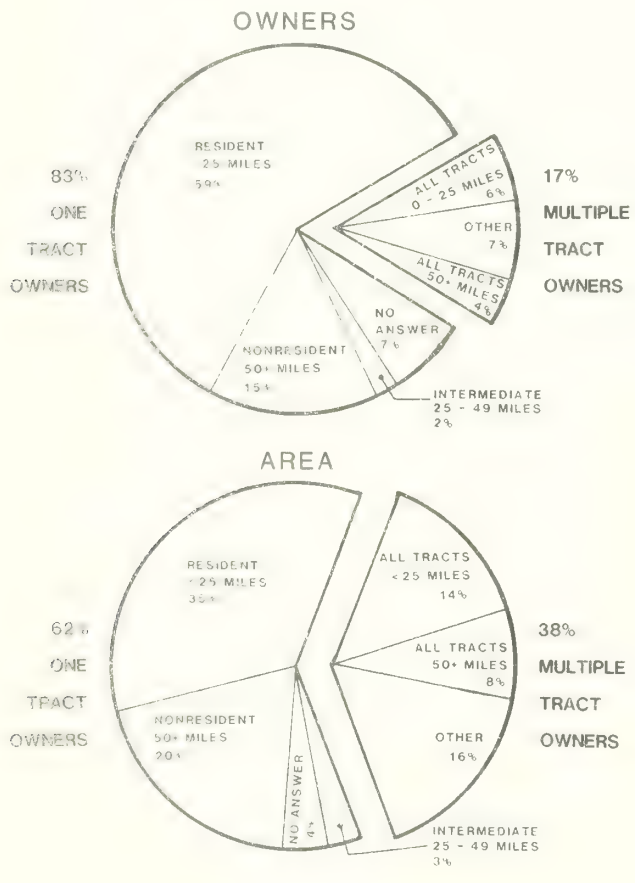


Figure 5.—*Distribution of ownership units by distance from residence and number of tracts owned.*

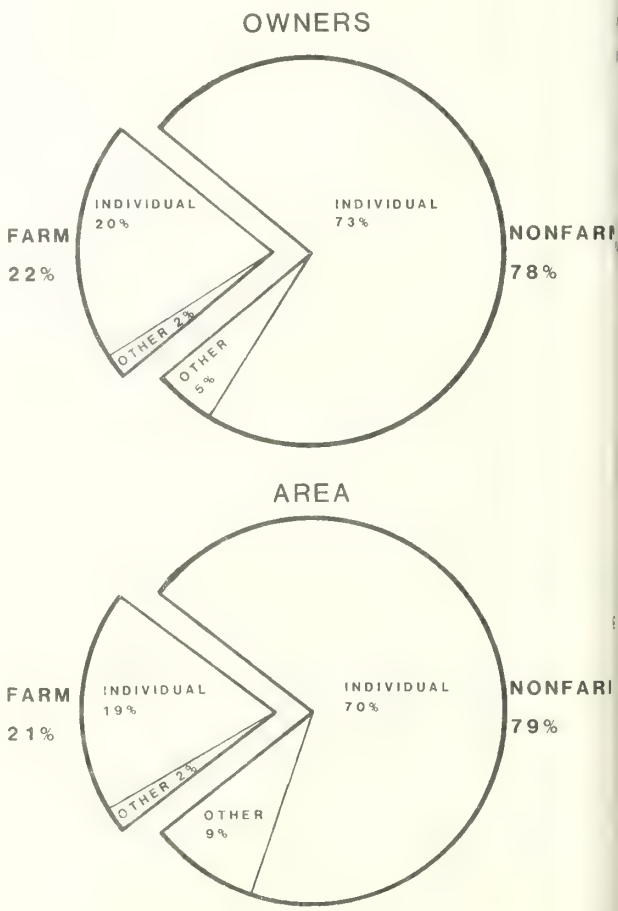


Figure 6.—*Distribution of farm and nonfarm ownership units by form of ownership.*

assed specifically as sports-recreation in nature. lost of the rest are likely to be recreation-oriented lso, as are the estimated 50 trusts.

Thus, most business and group ownership units ave recreation as an important endeavor, whether rmally or informally organized, except for those volved in real estate, land speculation, or farming ig. 7). It follows that individually held farm and onfarm ownerships hold the most opportunity for ore intensive forest management.

OWNER CHARACTERISTICS

Individual and joint owners were asked to provide formation on their occupation, age, education, inme, and early-life environment. Other studies ave used these variables to predict owner response nd attitudes towards tree planting, harvesting, imrovement cutting, and general forest management ractices. These variables also may give insight into he ability of owners to practice more intensive rest management.

Figure 8 and table 12 show the distribution of wners and area by occupation. Retired persons own rger than average properties (28 acres). They ake up 20 percent of the owners and contribute 27 ercent of the area. Farmers, who make up only 5 ercent of the individual owners, own 8 percent of

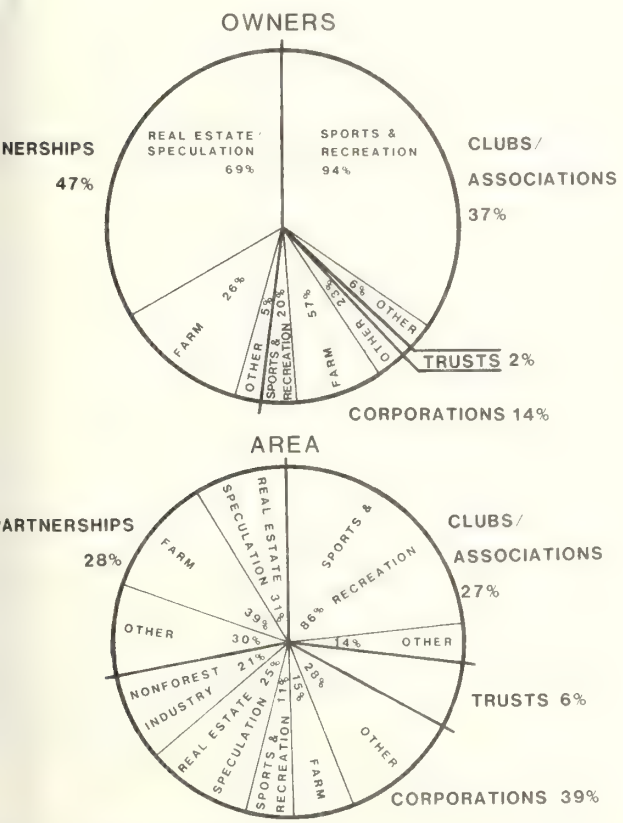


Figure 7.—*Distribution of business and group ownership units by form of ownership and nature of business.*

the area. They hold 591,750 acres or about 36 acres each. We estimate that 65 percent of the forested acreage on active farms is controlled by part-time farmers or owners who may not actively work on the farm (table 13). One-fifth of the farm owners are retired.

Owner profiles provide a general description of who owns Michigan's individually held private forest land (tables 14-17, fig. 9). Sixty-five percent are 45 years or older, including slightly over one-fifth who are 65 years or older, and these owners control 75 percent of the forest land. Fifty percent are educated beyond high school, and 12 percent did not have formal training beyond the eighth grade. Eighteen percent of the owners earn $30,000 or more, and they hold 29 percent of the forest land. The average size of holding for this class is 36 acres, twice as large as that for the other income classes combined. Thirty-one percent of the individual owners have an annual income of less than $15,000. Eighteen percent did not answer the question. One-third of the owners spent the first 12 years of their lives in a city of 10,000 population or larger. A rural area or farm provided the early-life environment for 45 percent of the owners, and they own 49 percent of the individually owned forest acres.

OWNER OBJECTIVES AND ATTITUDES

Reasons for Owning Forest Land

We asked owners to tell us why they own forest land, what benefits they have received from woodland ownership in recent years, and what benefits

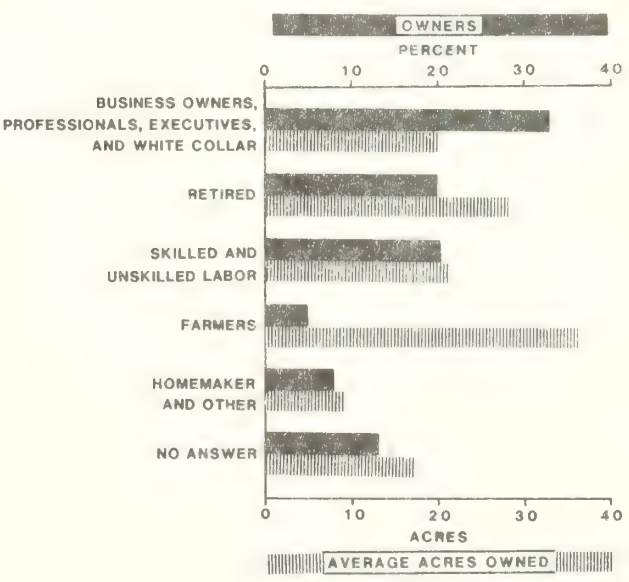
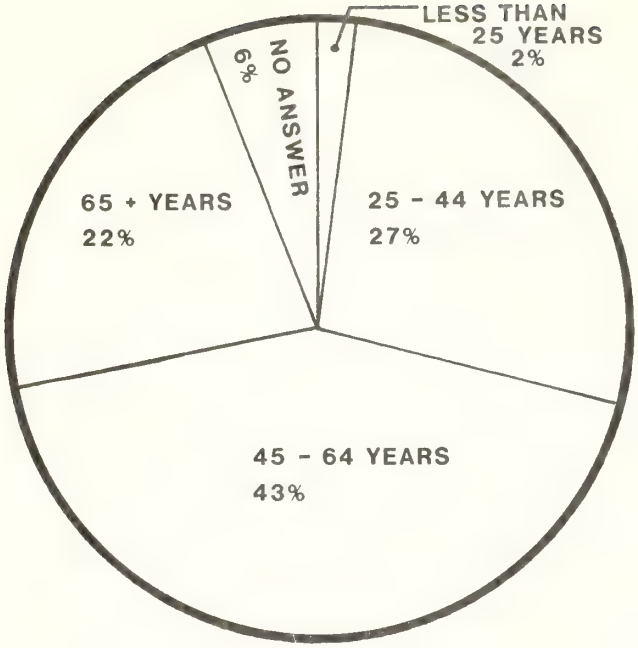
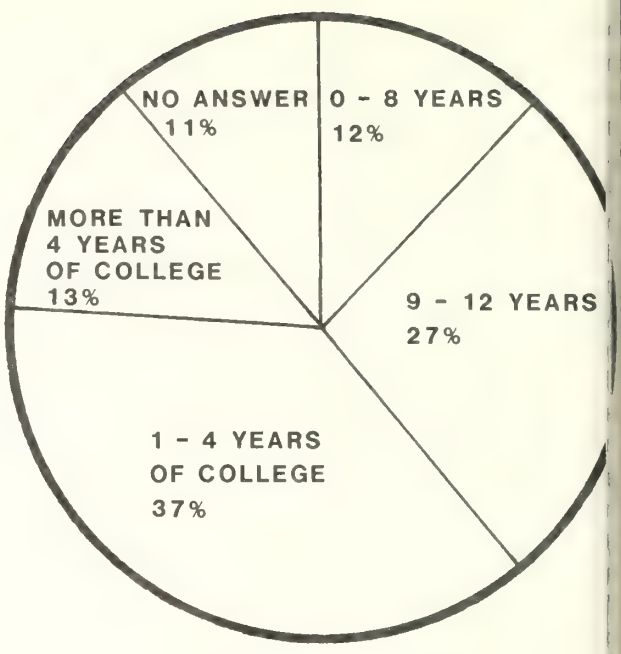


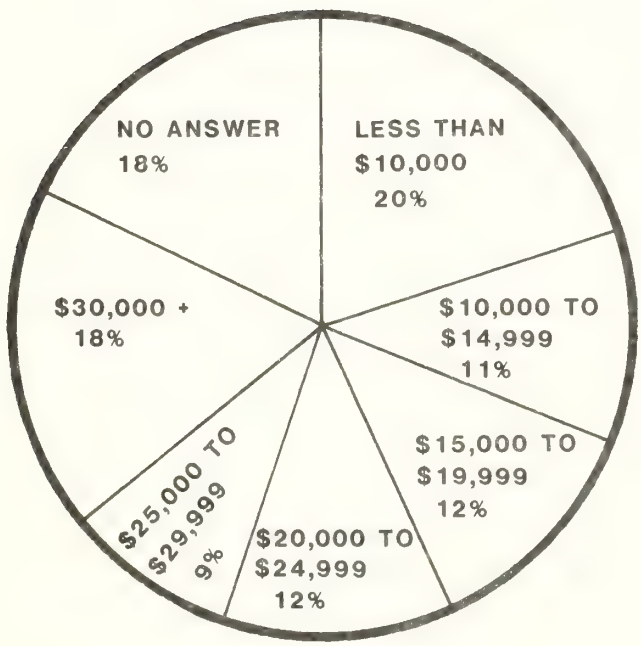
Figure 8.—*Distribution of individual owners and average area owned by owner occupation.*



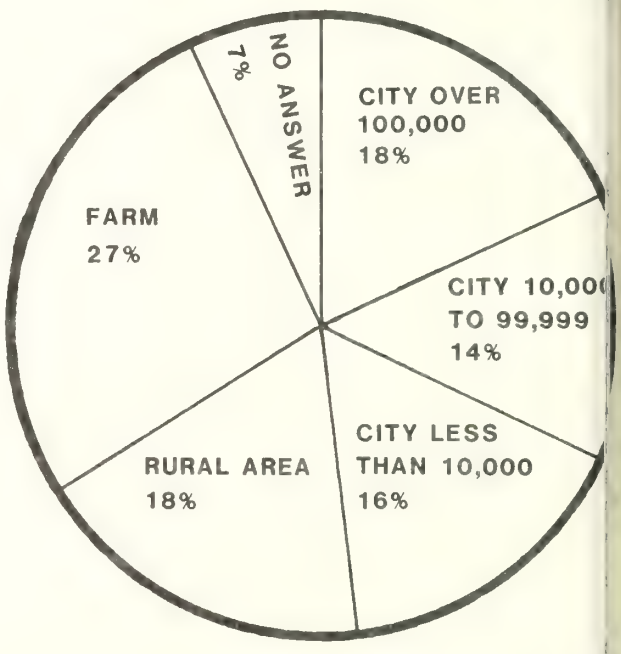
AGE



EDUCATION



ANNUAL INCOME



EARLY LIFE

Figure 9.—Distribution of number of owners by owner characteristics.

they expect to receive in the near future. Not surprisingly, several different reasons surface as important, but very few owners rank timber production high (table 18). Only 3 percent of the owners, who own 13 percent of the commercial forest land, rank timber production as their first or second reason for owning woodland. Utilitarian reasons (part of farm or residence, home use), amenities (recreation, second home, esthetic enjoyment), and as an investment are the major reasons cited for woodland ownership by Michigan owners.

Even for major harvesters, timber production does not rank high as a primary reason for owning forest

nd (table 19). Forty percent of them rank either art of farm, part of residence, or own use of products s the most important reason for owning, while 22 ercent cite recreation uses; 30 percent thought land s an investment was most important. For minor nd nonharvesters, 29 percent of the owners with 42 ercent of the land rank recreation, esthetics, or abin land as the primary reason they own forest nd (minor harvesters were defined as owners who aid they had cut less than 20 cords of firewood or mall amounts of other products for their own use). ut 48 percent of these owners with 29 percent of the rea cite more utilitarian objectives (part of the farm r residence, home use) as the reasons for ownership. or owners who plan to harvest in the near future, nvestment and farm or domestic use are important wnership objectives (table 20). For those with no arvest plans, the forest is often simply there as part f the residence. In the southern Lower Peninsula, art of residence or part of farm are especially impor- nt (table 21). In the northern Lower Peninsula, nd investment is cited most frequently as the pri- ary reason for owning; it may be that land values here have appreciated more than in other areas.

Primary Benefit from Owning Forest Land

Recreation use and esthetic enjoyment combined ccount for a high proportion of the primary benefit wners got from their forest ownership during the st 5 years. Whether the owners have harvested or ot doesn't seem to make much difference (table 22). f those who have conducted major harvests, only 6 ercent rank timber income as the primary benefit f ownership, and 25 percent say they receive no pecial benefit at all. Of course, farm or home use is n important benefit for harvesters compared with onharvesters; this is especially true for minor har- esters. Increase in land value is seen as less impor- nt by minor harvesters than by the other groups.

A ranking of the primary benefit expected during he next 5 years follows a similar pattern (tables 23 nd 24). Timber income ranks low while recreation nd esthetic enjoyment are important expected ben- fits. Farm or home use is again expected to be im- ortant for firewood cutters. Once again, increase in and value is not as important for minor harvesters s it is for the others. The interest in increased prop- rty value may stem from a perception of land own- rship as a hedge against the high inflation experi- nced in the late 1970's.

Harvest History and Why People Harvest

We asked people to tell us about their most recent imber harvest but did not specify a time limit. However, most were conducted within the past 10 years. Most firewood cutting was done within the previous 3 years.

Of the estimated 171,000 owners who harvested some timber, 97 percent are individuals. Twenty-three percent of all owners are major harvesters, and they hold 38 percent of the acreage (table 25). Of this group, 20 percent cite land clearing as a significant reason for harvesting (table 26). These owners hold relatively small forest tracts (9 acres on the average). Another 37 percent cite mature timber or thinning and improvement as an important reason; the average holding for these owners is 59 acres. Reasons for harvesting varied considerably among Survey Units (table 27).

Many studies have shown that farm forests are more likely to be harvested than nonfarm, and our study confirms this finding. Thirty-six percent of the farm ownership units, with 60 percent of the farm forest acreage, have had major timber harvests (table 28). Only 20 percent of the nonfarm units, having 40 percent of the nonfarm acreage, have had major harvests. Also, more farm units have harvested firewood and other products primarily for their own use than have nonfarm units.

Why Owners do not Harvest

Fifty percent of all owners have not harvested timber (table 25). This does not mean timber on these holdings has never been harvested, but simply that there has been no harvest during the tenure of the current owners. Another 21 percent of all owners have harvested only a few cords (usually 20 cords or less) of firewood or a small amount of other products in their most recent harvest. A surprisingly large number of these owners completed the question on reason for not harvesting. Nearly all of these respondents said they cut firewood or other products for their own use or to salvage dead or dying trees, often citing both reasons. Another reason occasionally given was thinning their woodland, again often in combination with cutting for their own use. Apparently these owners did not consider cutting a few cords of firewood or posts as conducting a timber harvest and felt they should tell us why they had not harvested.

The reasons given for not harvesting by 39 percent of the owners (who control 24 percent of the area) dealt with physical aspects of the resource (tables 29 and 30), such as immature timber, too small a volume, too small an area, or poor quality. Thirteen percent gave reasons more temporary in nature: No market, low price, selling land, land in unsettled estate, and saving for retirement, for emergency income, or as a legacy for heirs. These owners hold 20 percent of the nonharvested forest

acreage. Twenty-six percent of the owners, accounting for 30 percent of the acreage, cited reasons that may be of more concern to foresters involved with timber procurement or management: Ruin the scenery (13 percent); destroy hunting (6 percent); opposed to harvest, distrust loggers, and fire hazard (5 percent). The remaining 20 percent gave a variety of other reasons or did not answer the question.

Harvest Plans

There is, perhaps, no more opportune time to influence forest management than when an owner harvests timber, whether a major cut is made or only a few cords of firewood are removed (since the latter often occurs annually). When we asked owners to tell us about their harvest plans, we found that slightly more than half indicated an interest in harvesting at some time in the future (table 31). The results showed that most of the 600,000 acres of farmer-owned forests may eventually be cut, and that many of these owners plan to harvest within the next 10 years. Forty-five percent of the professionals never plan to harvest timber; yet, professionals with positive or indefinite harvest plans control 762,000 acres—81 percent of the forest acreage in this occupation category. Thus, as a group they offer more harvest potential than farmers. Executives and skilled trade occupations similarly offer considerable potential. So do individuals who are retired (although retired owners who never plan to harvest

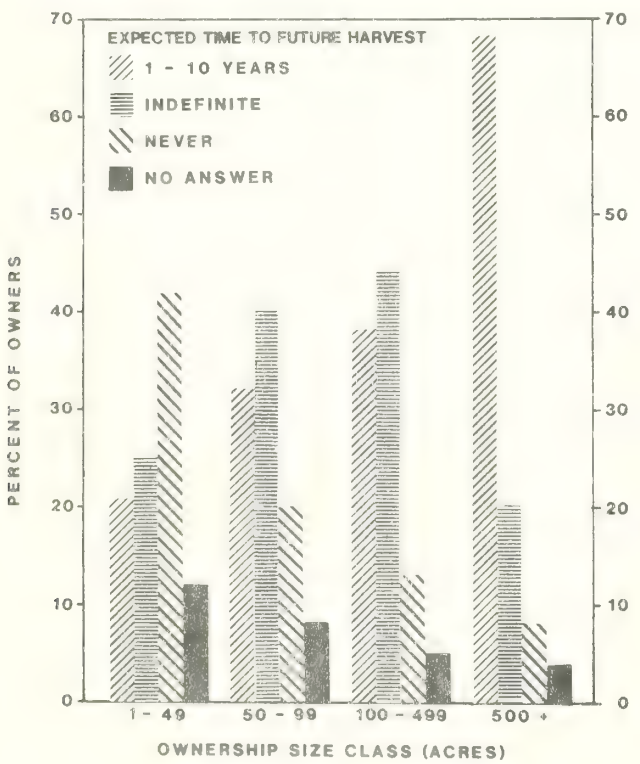


Figure 10.—*Distribution of owners by size of ownership and intention to harvest.*

hold 538,000 acres). The proportion of owners i tending to harvest increases as the forest acr owned increases (table 32, fig. 10). In the 1-49 ac ownership size class, only 46 percent of the owne intend to harvest; this increases to 88 percent for th 500/A acre size class. In any event, ownership of onl a few acres of forest land apparently does not prever some owners from considering a harvest.

Harvesting Practices

Over half of the owners who harvested timbe products selected the area or trees to be cut them selves (table 33, fig. 11). Only about one in ten har vesters had assistance from a forester in selectin timber to be cut, and one in four left it up to th buyer or had assistance from the buyer in determin ing what to cut.

Selection cutting, where only preselected, marke trees are removed, was used by about 38 percent o the harvesters. When foresters were included, selec tion was used over 65 percent of the time and diame ter limit, where only trees above a certain diamete are cut, 25 percent of the time. Forty percent of th landowners used the selection method, and 21 per cent used diameter limit. Buyers acting alone use diameter limit 35 percent of the time and selectio cutting 23 percent.

Clearcutting was used by 4,150 owners (5 per cent), on properties averaging 103 acres in size Ownership units for which foresters used clearcut ting averaged 343 acres. Very few owners reporte using a combination of methods, and 19 percent did not know what method was used or did not answe the question.

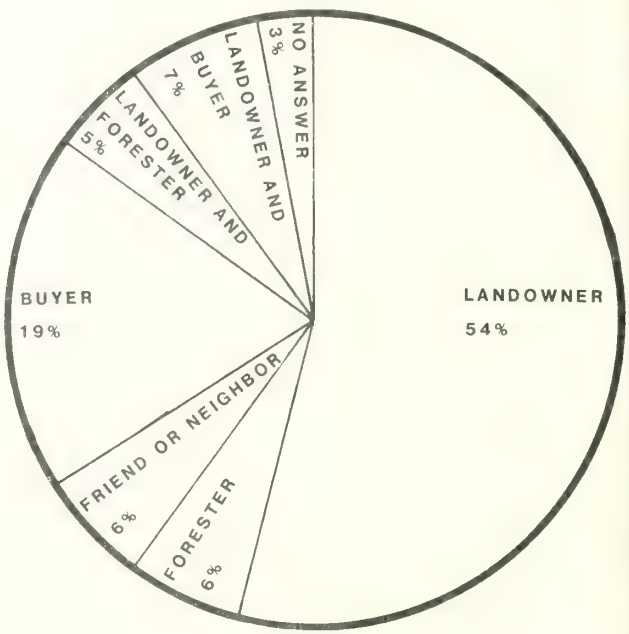


Figure 11.—*Distribution of harvesters by person selecting trees to be cut.*

Products Harvested

Farmers and miscellaneous private landowners are estimated to provide 70 percent of the annual removals of hardwood growing stock and 76 percent of the annual removals of hardwood sawtimber in Michigan (Raile and Smith 1983). In addition, they provide over 50 percent of softwood removals. Fuelwood harvest has increased greatly in recent years as individuals have begun burning wood to supplement or replace fossil fuels in home heating; firewood is the product cut by most major harvesters (47 percent), followed by saw logs (43 percent) and pulpwood (21 percent) (table 34, fig. 12). Only pulpwood cutting shows much sensitivity to size class of property—the proportion of owners harvesting pulpwood increases as acres owned increases. In addition to firewood, small ownerships have a surprisingly high saw log harvest.

Thirty-four percent of the major harvesters (who account for 57 percent of the land in this category) cut more than one product. Ninety-five percent of the minor harvesters cut firewood, and very few cut any other products. A small number cut posts (4 percent), Christmas trees (4 percent), and saw logs (3 percent).

We estimate that 118,850, or about 31 percent of all owners, cut firewood in their most recent harvest. Of course, many of them probably harvest firewood annually.

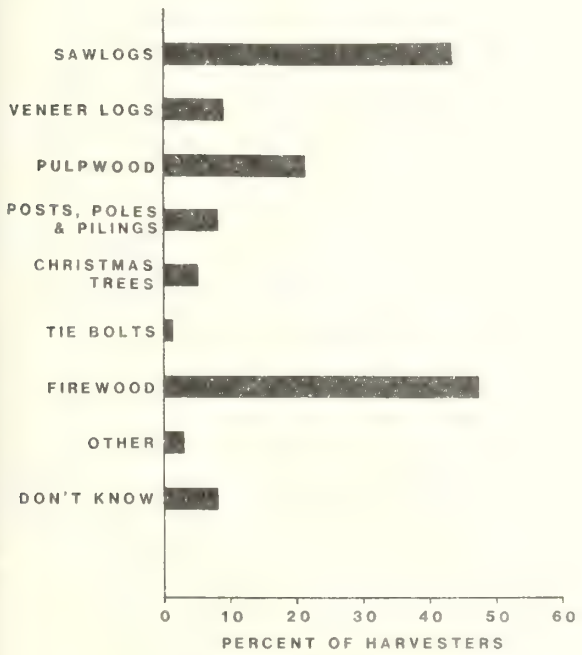


Figure 12.—*Distribution of major harvesters by products harvested.*

Improvement Cut

We asked owners if they would be interested in an improvement cut or whole-tree thinning, where only selected trees are removed to improve growth and timber quality and to provide a healthier forest and better wildlife habitat. We indicated whole-tree skidding would remove the entire tree, including top and limbs, leaving a slash-free area after harvest. Thirty-nine percent of the owners holding 63 percent of the area said they would be interested; relative to their proportion in the population, nonresident owners are more amenable to this type of cutting than residents (table 35).

Size class of ownership influenced the response to whole-tree thinning—a greater proportion of the larger landowners indicated an interest, as they did for harvesting in general. For example, only about one-third of the landowners with less than 50 acres were interested, while 84 percent of those holding 500 acres or more were interested. However, the former account for 1.9 million acres, while the latter account for only 912,800 acres.

Widespread whole-tree improvement thinning could have a substantial impact on timber availability. Forty percent of the owners (who hold 21 percent of the commercial forest land) said they never intend to harvest their timber. Yet, 31 percent of these owners (817,000 acres) indicated an interest in whole-tree improvement thinning (table 36).

Relative to their proportion of the population, we find that those in skilled trades, professionals, and especially those earning $30,000 or more are slightly more interested in improvement cutting than other groups (table 37).

FORESTRY ASSISTANCE

We analyzed our data with the objective of determining who has had assistance in timber harvesting and forest management practices. This analysis identifies, by property and owner characteristics, those who responded positively to an open-ended question about management assistance or whether a forester assisted in conducting a timber harvest. The information should aid in increasing the efficiency of assistance and incentive programs to encourage forest management intensification on nonindustrial private holdings.

We found that, over an unidentified timespan, 10 percent of the owners holding 28 percent of the forest land had requested forestry assistance (table 38). More than 39,000 ownership units totaling 2,475,500 acres were involved.

Three-quarters of those who have requested assistance own less than 50 acres of forest land, but 48

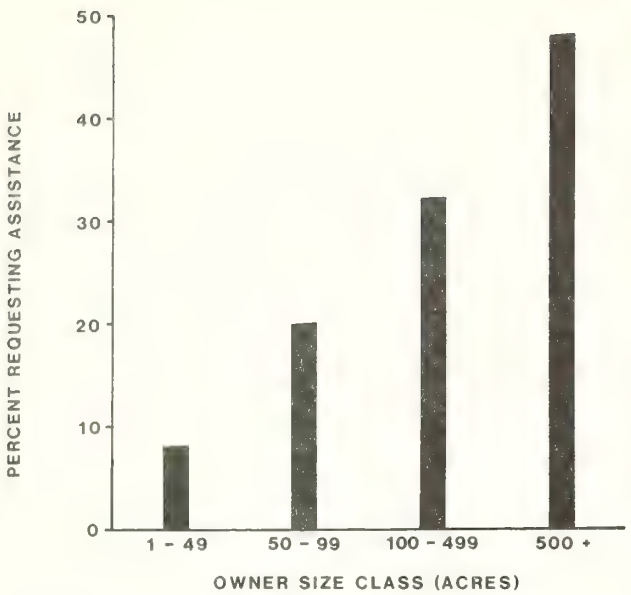


Figure 13.—*Percent of owners requesting forestry assistance by owner size class.*

percent of the owners who hold 500 acres or more have requested assistance (table 39, fig. 13). While a significant portion of owners requesting assistance own small-sized holdings, only 8 percent of all owners of small-sized tracts have done so; on the average, it is the larger ownership units within this smaller size class that have requested assistance.

Seventy-seven percent of the owners who have sought assistance live less than 25 miles from their nearest timber tract; 15 percent live more than 50 miles away; and 3 percent live 25-50 miles away (table 40). Five percent did not answer the question. Sixty-three percent of the acreage in assisted ownership units is held by owners located less than 25 miles from their nearest tract of timber, while 28 percent is held by owners who live 50 miles or more away. These proportions are not much different than for all owners. Nonresident owners holding more than 100 acres account for a significant portion (23 percent) of the acres in ownerships receiving assistance.

Major timber harvesters were more than twice as likely as nonharvesters to have had forestry assistance (table 41). Some of this is because the nature of assistance involved timber sale evaluation. Yet, it is of some concern to foresters that a large number of owners involved in harvesting timber apparently do not have any professional help in carrying out the harvest.

The most commonly requested type of assistance—general forest management—ranked highest for all size classes of properties and increased in importance slightly as property size increased (table 42). This assistance usually involves development of a management plan or situatio where several types of forestry assistance are r quested. It is not surprising that owners of larg holdings had slightly more diversification in the requests. Assistance in timber sales or in valuati of timber was also popular with owners of all pro erty size classes. Timber stand improvement was i portant in the medium-sized properties, and tr planting was quite popular with smaller forest hol ings. Insect and disease control and boundary su veying accounted for an extremely small portion requests, and were included in general forest ma agement. The distribution of acreage by nature assistance and size of ownership closely patter that for owners.

Are there differences in type of forestry assistan requested by distance from the nearest tract? Mo than 40 percent of the nonresidents (50/A mil away) were assisted in planting trees, but they co trol only 9 percent of the acreage held by assiste nonresident owners (table 43). Twenty-two perce of the nonresident owners requested general ma agement assistance, and they hold 43 percent of th acreage. Resident owners (less than 25 miles away did not request tree planting assistance nearly a much; general management and sales valuation a sistance were popular with these owners. It seem that a significant assistance effort is focused on tre planting on properties with relatively small foreste acreage.

In summary, we found that three-quarters of th assisted owners live within 25 miles of their forest and they control 63 percent of the acreage held b assisted owners. General forest management an sales and valuation assistance account for over hal of the kind of help requested. About 15 percent of th assisted owners are nonresidents, and they contro nearly 30 percent of the acreage held by assiste owners.

Which Owners Request Forestry Assistance?

When the proportions for number of assisted own ers and acres owned are analyzed by kind of assis tance and owner characteristics the results are sim ilar to those reported by Webster and Stoltenberg (1959). The variables age, occupation, education, and income are highly correlated in various ways. For example, professionals and executives are also likely to be college graduates and to have higher average incomes. The tables show the proportions of owners by kind of assistance requested as distributed over the entire population of assisted owners and (in parentheses) the distribution within a specific class or column (tables 44 to 47). Retired people (hence, also the older age class group) have a

high proportion of forestry activity relative to their proportion in the overall population. Because no time limit was placed on the reporting of assistance, some could have been carried out prior to retirement. Planting and sales and valuation assistance were important activities for these owners. General management assistance stands out for professional people, executives, and white collar workers, as well as the $30,000 and over income group.

There is an interesting contrast between the proportions of professional owners and executive owners assisted (table 45). Relative to their proportions in the overall population, professionals are much more active than executives (17 percent to 7 percent). Possibly executives are more aware of alternative investment opportunities that promise higher returns on investment and thus choose not to practice more intensive forest management; or perhaps they simply are less well informed about the availability of forestry assistance. On an acres-owned basis, there is not much difference between the two classes. Thus, executives with larger properties are more responsive.

Younger owners take more advantage of a variety of assistance activities (general management) than the 65 and over group. Early forestry extension work may have emphasized tree planting, while in more recent times increased emphasis has been placed on management planning and forest improvement work. Better markets for low quality timber also may have increased the opportunity for doing improvement work.

Agencies to Contact

When asked what agency, office, or individual they would contact if they wanted forestry information or assistance, 49 percent of the owners said they didn't know where to get help (table 48). This group controls 44 percent of the commercial forest land in Michigan. Another 29 percent, holding 17 percent of the land, didn't answer the question, leaving an anemic 22 percent of the owners with 39 percent of the land that know who to go to for help. And, as usual, owners of larger holdings are more knowledgeable. The State Forestry Department is most often cited as the agency to contact for assistance. Not surprisingly, most who had been assisted remembered who helped them (table 49).

RECREATION

Recreation, second home, or esthetic enjoyment is the primary reason for owning forest land for an estimated 27 percent of the owners and the second most important reason for 30 percent (double counting was possible). Seventy-seven percent of the private forest landowners holding 88 percent of the forest land have some recreational use of their land by themselves, their family, close friends, or the general public (table 50). Only 10 percent of the owners holding 5 percent of the forest land did not participate in or permit recreational use. In most cases, owners reserve the recreational opportunity for themselves, their family, or close friends.

Seventy-four percent of the owners with 84 percent of the land personally use their forest for recreation or have family or close friends that do (table 51). Hunting stands out as the most important use, followed by hiking or skiing, berry picking, and snowmobiling or trail biking. Of course, multiple uses are common.

Public use is allowed by only 17 percent of the owners with 2,347,850 forested acres (table 52). Hunting (11 percent), and the hiking/skiing and snowmobiling/trail biking combinations (8 percent each), are the uses most commonly permitted. An estimated 47 percent of the owners holding 47 percent of the acres do not permit public use, but an additional 36 percent of the owners with 27 percent of the acres did not indicate whether public use is permitted or not.

A slightly higher proportion of the forest acreage is available for public use in the Upper Peninsula, but the total amount available is largest in the northern Lower Peninsula (table 53). Hunting use by the public is allowed on a higher proportion of ownerships in the Upper Peninsula. Public use is most restricted on the smaller ownership units, but size of ownership does not appear to have a marked effect on availability for a variety of recreation purposes (table 54).

In addition to asking owners to identify the kinds of public recreation permitted on their forest land, we asked if the land was posted. We found that most owners do not post their land (58 percent). A slightly higher proportion of the properties and a significantly higher proportion of the acreage is posted in the northern Lower Peninsula—51,450 ownerships, or 2.3 million acres (table 55). Posting is proportionately less common on Upper Peninsula properties, but by far the most unposted properties are in the southern Lower Peninsula (104,300).

Only slightly more than one-third of the properties are posted where owners say public use is not permitted (table 56). In addition, an estimated 31,500 properties are posted whose owners did not tell us whether public use is permitted or not. Control of access is the most important reason for posting, especially for properties where public use is not

permitted. However, many owners may post only a portion of their holdings or may feel it is futile to post at all. Many respondents noted that it is nearly impossible to prevent unwanted public use.

Hunting is an important use on 47 percent of the properties that account for 68 percent of the forest acres (table 57). About 80 percent of the owners who hunt reserve the privilege for themselves, family, or close friends. Very few who do not hunt allow the general public to do so.

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APPENDIX

STUDY METHOD

In this study, all nonindustrial individual, commercial, and business ownerships of 10,000 acres or more of commercial forest land were identified and excluded. Also excluded were forest industry and public lands. These owners generally have well understood policies and objectives toward forest management and timber harvesting. The total acreage of commercial forest land in private ownerships was obtained from the Michigan forest survey. The commercial forest base for nonindustrial private forest landowners in each Survey Unit is shown below:

Unit	All private ownerships	Large private ownerships		Small private ownerships
	(Acres)	(No.)	(Acres)	(Acres)
Eastern UP	1,412,600	9	144,000	1,268,600
Western UP	1,706,800	12	255,800	1,451,000
Northern LP	3,881,600	3	43,900	3,837,700
Southern LP	2,241,100	0	--	2,241,100
Total	9,242,100	24	443,700	8,798,400

The sampling scheme used here was derived from the sampling design used in the forest survey by the North Central Forest Experiment Station. Field crews obtained the name and mailing address of the owner of each of the 3,450 forested field plots in the State. These plots are systematically distributed within each of the four Survey Units.

The exclusion of large landowners reduced the number of nonindustrial private landowner plots to 3,282. From these plots, 2,045 plots were randomly selected and the owners contacted for information. Through multiple mailings, 1,214 usable questionnaires were returned, for a response rate of 59 percent.

The probability that a forest landowner would be sampled depended on the rate of sampling and the acreage of commercial forest land owned. Each Unit in Michigan had a different rate of sampling. To calculate the area represented by each plot, the area of commercial forest land owned by small, nonindustrial owners in each Unit was divided by the number of field plots represented by valid questionnaires.

Four sampling Units were involved in the study:

Unit	Usable questionnaires	Usable survey plots	Average acreage per plot
	---- *(Number)* -----		
Eastern UP	293	304	4,173
Western UP	317	331	4,384
Northern LP	327	334	11,490
Southern LP	277	280	8,004
All Units	1,214	1,249	7,044

Since the sampling scheme is area-based, there was a low probability of inclusion for owners of small parcels of forest land. To estimate the total number of ownership units in Michigan it was necessary to weight the number of ownership units obtained in the sample. This procedure can be stated as:

$$N = \frac{CFL_p}{N_r} \Sigma \frac{1}{A_i}, \text{ where}$$

N = estimated number of private ownership units in the sampling stratum,
CFL_p = the acres of commercial forest land in the sampling stratum,
N_r = the number of respondents in the sampling stratum, and
A_i = acres owned by the individual respondent.

The ΣN then equals the estimated number of small private owners in the State. This is an unbiased estimate of the total number of persons who own commercial forest land in Michigan.

A questionnaire[1] was developed from ownership studies done in the northeastern States and revised to accommodate unique Michigan data requirements (Birch 1982). A cover letter explaining the purpose of the study and a questionnaire were mailed to each owner; those who had not responded

[1]*Copies of questionnaire are available from: Publications, North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, MN 55108.*

in approximately 2 weeks received a reminder postcard. About 10 days later a second letter and questionnaire were mailed to nonrespondents, again followed in 2 weeks by a final reminder card.

Owners having more than one survey plot on their land were sent only one questionnaire; their responses were weighted proportionately to the number of plots on their land.

SAMPLING ERRORS

A measure of the reliability of the data in this report is given by the sampling error associated with an estimate. Sampling errors were calculated for the important categories and are shown in the individual tables. The sampling errors for acres of commercial forest land in private ownership were calculated as part of the forest survey.

The sampling errors (in percent) are:

Unit	Estimates of acres of private commercial forest land	Estimates of number of owners of private commercial forest land	Estimates of number of owners holding 10 or more acres
Eastern UP	0.85	8.8	6.7
Western UP	.87	16.8	6.6
Northern LP	.80	14.0	6.5
Southern LP	1.66	10.9	5.9
All Units	0.68	9.0	3.9

The smaller the sampling error, the greater the reliability of the estimate. If an estimate has a sampling error of 15 percent, the chances are two out of three that the true value will fall within the range represented by 85 and 115 percent of the survey value. As shown in the tabulation, when small forest ownership units are included in the study population, the sampling error for the estimated number of owners increases substantially.

DEFINITION OF TERMS

Clearcutting.—The method of regenerating timber in which the area is cut clear in the literal sense of the word; virtually all the trees, large and small, are removed. The term is often erroneously applied to any type of cutting in which all the merchantable timber is removed.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Diameter limit.—The method of regenerating timber in which all trees above a specific diameter are removed.

Farm.—An ownership unit which the respondent designated as an active farm.

Forest industries.—Companies or individuals operating wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelter-belt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Major harvest.—The cutting in the most recent harvest of 20 cords or more of firewood or 3,000 board feet of sawlogs, or large amounts of posts, poles, or Christmas trees primarily for sale to others.

Minor harvest.—The cutting in the most recent harvest of less than 20 cords of firewood or 3,000 board feet of sawlogs, or small amounts of posts, poles, or Christmas trees primarily for own use.

Miscellaneous private land.—Privately owned land other than forest industry and farmer-owned land.

Ownership size class.—The amount of commercial forest land owned by one owner, regardless of the number of tracts or parcels.

Ownership unit.—Forested property owned by one owner regardless of the number of tracts or parcels involved; the amount of forest land declared by the respondent to be owned by the person, estate, partnership, corporation, club, or association to whom the questionnaire was addressed.

Owner tenure.—The length of time a property has been held by the owner.

Posted land.—Ownerships displaying signs indicating public trespass or admittance not allowed.

Private commercial forest land.—All commercial forest land other than that owned by Federal, State, or local governments or their agencies.

Pulpwood.—Any log from which woodpulp is to be made; usually measured in bolts of 4, 5, or 8 feet, and somewhat smaller in diameter than saw logs or veneer logs.

Sawtimber trees.—Live trees of commercial species that are (a) at least 9 inches in d.b.h. for softwoods or 11 inches for hardwoods, and (b) that contain at least one 12-foot or two noncontiguous 8-foot merchantable saw logs, and that meet regional specifications for freedom from defect.

Selection system.—The method of regenerating timber in which trees of all sizes are harvested. However, in practice, frequently only the oldest or largest trees in a stand are harvested. Trees are taken singly or in small groups, but the entire stand is never cleared completely in a single operation.

Timber removals.—The volume of growing-stock or sawtimber trees harvested or killed in logging or in cultural operations such as timber stand improvement, land clearing, or by changes in land use.

Timber salvage.—Removals of down, damaged, or diseased trees.

Veneer log.—Any log from which veneer is to be made, by peeling (rotary cutting) or slicing.

Table 1.--Estimated number of private ownership units and acres of commercial forest land owned by size class and forest survey unit, Michigan, 1981

Size class of ownership (acres)	Eastern UP		Western UP		Northern LP		Southern LP		Total		Sampling error
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Percent
					OWNERS						
1-9	3,300	17	12,350	38	73,450	50	118,150	64	207,250	54	14
10-29	4,400	22	6,450	20	41,950	28	47,550	26	100,350	26	7
30-49	5,550	28	6,250	19	15,200	10	11,700	6	38,700	10	6
50-69	1,300	6	2,000	6	5,200	4	2,750	2	11,250	3	10
70-99	1,900	9	2,700	8	4,800	3	2,000	1	11,400	3	8
100-199	2,250	11	2,050	2	5,500	4	1,250	1	11,050	3	6
200-499	950	5	700	2	1,300	1	500	**	3,450	1	8
500-999	150	1	200	1	400	**	*	**	750	**	12
1000-4999	250	1	50	**	150	**	50	**	500	**	14
5000-9999	--	--	*	**	*	**	--	--	*	**	45
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100	7
					ACRES OWNED						
1-9	20,850	2	35,100	2	206,800	5	400,200	18	662,950	8	11
10-29	79,300	6	105,200	7	689,400	18	728,350	32	1,602,250	18	7
30-49	208,650	16	236,750	16	574,500	15	424,200	19	1,444,100	16	6
50-69	70,950	5	109,600	8	298,750	8	160,100	7	639,400	7	10
70-99	150,200	12	214,800	15	390,700	10	160,100	7	915,800	10	8
100-199	287,950	23	280,500	19	712,400	19	160,100	7	1,440,950	16	6
200-499	267,100	21	223,550	15	390,650	10	136,050	6	1,017,350	12	7
500-999	83,450	7	127,150	9	241,300	6	24,000	1	475,900	5	12
1000-4999	100,150	8	105,200	7	287,250	7	48,000	2	540,600	6	13
5000-9999	--	--	13,150	1	45,950	1	--	--	59,100	1	45
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100	.68

* Fewer than 25 owners

** Less than 0.5 percent

Table 2.--Estimated number of private ownership units and acres of commercial forest land owned by number of tracts and forest survey unit, Michigan, 1981

Number of tracts	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
1	13,600	68	24,050	73	126,050	85	145,400	79	309,100	80
2	4,100	20	5,100	16	17,350	12	22,000	12	48,550	13
3 or more	2,050	10	1,700	5	3,600	2	4,550	2	11,900	3
No answer	300	2	1,900	6	950	1	12,000	7	15,150	4
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100
					ACRES OWNED					
1	667,700	53	775,900	53	539,300	66	376,700	61	5,359,600	61
2	300,450	24	267,400	18	589,400	18	480,250	21	1,737,500	20
3 or more	279,600	22	359,450	25	540,050	14	352,150	16	1,531,250	17
No answer	20,850	1	48,250	3	68,950	2	32,000	1	170,050	2
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100

Table 3.--Estimated number of private ownership units and acres of commercial forest land owned by distance from residence to nearest forest tract and size class of ownership, Michigan, 1981

Distance from residence (miles)	Size class of ownership (acres)									
	1-49 acres		50-99 acres		100-499 acres		500+ acres		All classes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	238,700	69	13,750	61	8,800	61	700	56	261,950	68
25-49	5,600	1	1,250	5	600	4	50	4	7,500	2
50+	58,300	17	6,350	28	4,700	32	450	36	69,800	18
No answer	43,700	13	1,300	6	400	3	50	4	45,450	12
Total	346,300	100	22,650	100	14,500	100	1,250	100	384,700	100
					ACRES OWNED					
0-24	2,496,000	67	930,900	60	1,427,650	58	517,350	48	5,371,900	61
25-49	104,800	3	87,300	5	107,450	4	33,400	3	332,950	4
50+	771,300	21	444,000	29	840,300	35	464,700	44	2,520,300	29
No answer	337,200	9	93,000	6	82,900	3	60,150	5	573,250	6
Total	3,709,300	100	1,555,200	100	2,458,300	100	1,075,600	100	8,798,400	100

* Fewer than 25 owners

** Less than 0.5 percent

Table 4.--Estimated number of private ownership units and acres of commercial forest land owned by distance from residence to nearest forest tract and forest survey unit, Michigan, 1981

Distance from residence (miles)	Eastern UP			Western UP			Northern LP			Southern LP			All units		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
							OWNERS								
0-24	12,350	61	14	20,300	62	25	86,750	59	21	142,550	77	13	261,950	68	9
25-49	850	4	53	3,850	12	60	1,400	1	51	1,400	1	38	7,500	2	39
50+	6,050	30	18	5,200	16	17	46,950	32	22	11,600	6	40	69,800	18	13
No answer	800	4	41	3,400	10	39	12,850	8	50	28,400	15	42	45,450	12	29
Total	20,050	100	10	32,750	100	18	147,950	100	15	183,950	100	12	384,700	100	7
							ACRES OWNED								
0-24	721,950	57	7	837,250	58	7	1,987,800	52	7	1,824,900	81	6	5,371,900	61	2
25-49	41,700	3	32	122,750	8	20	80,450	2	38	88,050	4	30	332,950	4	13
50+	450,700	36	10	403,300	28	10	1,482,200	39	8	184,100	8	21	2,520,300	29	5
No answer	54,250	4	28	87,700	6	22	287,250	100	21	144,050	6	23	573,250	6	11
Total	1,268,600	100	.82	1,451,000	100	.87	3,837,700	100	.50	2,241,100	100	1.63	8,798,400	100	.68

Table 5.--Estimated number of private ownership units and acres of commercial forest land owned by distance from residence and number of tracts, Michigan, 1981

Distance from residence (miles)	Owners of one tract		Owners of more than one tract			
			Distance to: Nearest tract		Distance to: Farthest tract	
	Number	Percent	Number	Percent	Number	Percent
			OWNERS			
0-24	219,550	71	41,750	69	21,750	36
25-49	6,400	2	1,000	2	2,600	4
50+	55,800	18	13,950	23	18,950	31
No answer	27,350	9	3,750	6	17,150	29
Total	309,100	100	60,450	100	60,450	100
			ACRES OWNED			
0-24	3,036,600	57	2,313,800	71	1,194,550	36
25-49	222,350	4	106,200	3	225,700	7
50+	1,757,850	33	713,600	22	1,182,750	36
No answer	342,800	6	135,150	4	665,750	21
Total	5,359,600	100	3,268,750	100	3,268,750	100

Table 6.--Estimated number of private ownership units with more than one tract and acres of commercial forest land owned by distance to farthest tract and forest survey unit, Michigan, 1981

Distance farthest tract (miles)	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	1,650	27	2,150	32	4,700	22	13,250	50	21,750	36
25-49	1,050	17	400	6	800	4	350	1	2,600	4
50+	1,850	30	2,850	42	11,400	55	2,850	11	18,950	31
No answer	1,600	26	1,400	20	4,050	19	10,100	38	17,150	29
Total	6,150	100	6,800	100	20,950	100	26,550	100	60,450	100
					ACRES OWNED					
0-24	171,100	29	223,550	36	367,700	30	432,200	52	1,194,550	36
25-49	62,600	11	70,150	11	68,950	6	24,000	3	225,700	7
50+	221,150	38	245,500	39	540,000	44	176,100	21	1,182,750	36
No answer	125,200	22	87,650	14	252,800	20	200,100	24	665,750	21
Total	580,050	100	626,850	100	1,229,450	100	832,400	100	3,268,750	100

Table 7.--Estimated number of private ownership units and acres of commercial forest land owned by date of acquisition and form of ownership, Michigan, 1981

Year acquired	Individuals		Others		All forms of ownership	
	Number	Percent	Number	Percent	Number	Percent
			OWNERS			
1980-1981	3,400	1	100	**	3,500	1
1970-1979	162,600	45	9,750	39	172,350	45
1960-1969	78,350	22	1,600	7	79,950	21
1950-1959	33,050	9	2,550	10	35,600	9
1940-1949	36,550	10	300	1	36,850	9
Prior to 1940	17,450	5	650	2	18,100	5
No answer	28,050	8	10,300	41	38,350	10
Total	359,450	100	25,250	100	384,700	100
			ACRES OWNED			
1980-1981	85,150	1	39,300	4	124,450	1
1970-1979	2,252,900	29	159,050	16	2,411,950	27
1960-1969	1,866,750	24	195,300	21	2,062,050	24
1950-1959	1,420,950	18	155,250	16	1,576,200	18
1940-1949	1,100,350	14	87,300	9	1,187,650	14
Prior to 1940	756,450	10	244,050	24	1,000,500	11
No answer	332,500	4	103,100	10	435,600	5
Total	7,815,050	100	983,350	100	8,798,400	100

** Less than 0.5 percent

Table 8.--Estimated number of private ownership units and acres of commercial forest land owned by form of ownership and forest survey unit, Michigan, 1981[1/]

Form of ownership	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Individual	19,100	95	32,300	98	145,600	98	162,450	88	359,450	93
Partnership	300	1	200	1	450	**	11,100	6	12,050	3
Corporation	300	2	200	1	750	1	2,250	1	3,500	1
Club/Ass'n	300	2	*	**	850	1	8,150	4	9,300	2
Trust	*	**	*	**	300	**	--	--	350	**
Other	*	**	*	**	--	--	*	**	50	**
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100
					ACRES OWNED					
Individual	1,122,550	88	1,323,850	91	3,343,650	87	2,025,000	90	7,815,050	89
Partnership	66,750	5	30,700	2	80,450	2	96,050	4	273,950	3
Corporation	45,900	4	52,600	4	195,350	5	96,050	4	389,900	4
Club/Ass'n	25,050	2	26,300	2	195,300	5	16,000	1	262,650	3
Trust	4,200	**	8,750	**	22,950	1	--	--	35,900	**
Other	4,150	**	8,800	1	--	--	8,000	**	20,950	**
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100

1/ Data may not add to totals due to rounding.

* Fewer than 25 owners

** Less than 0.5 percent

Table 9.--Estimated number of farm and nonfarm ownerships and acres of commercial forest land owned by form of ownership, Michigan, 1981

Form of ownership	Farm				Nonfarm				Total			
	Owners	Percent	Acres	Percent	Owners	Percent	Acres	Percent	Owners	Percent	Acres	Percent
Individuals	77,750	93	1,701,400	90	281,700	93	6,113,650	88	359,450	93	7,815,050	89
Business and group ownerships												
Partnerships	3,100	4	107,400	6	8,950	3	166,550	2	12,050	3	273,950	3
Corporations	2,000	3	55,650	3	1,500	1	334,250	5	3,500	1	389,900	4
Clubs/Ass'n	--	--	--	--	9,300	3	262,650	4	9,300	2	262,650	3
Trusts	300	**	11,500	1	50	**	24,400	**	350	**	35,900	**
Other	--	--	--	--	50	**	20,950	**	50	**	20,950	**
Subtotal	5,400	7	174,550	10	19,850	7	808,800	12	25,250	7	983,350	11
All owners	83,150	100	1,875,950	100	301,550	100	6,922,450	100	384,700	100	8,798,400	100

** Less than 0.5 percent

Table 10.--Estimated number of business or group ownerships by nature of business and form of ownership, Michigan, 1981

Nature of business	Form of ownership										All businesses and groups	
	Partnerships		Corporations		Clubs/ass'n		Trusts		Other			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS							
Nonforest industry	--	--	200	13	--	--	--	--	--	--	200	1
Nonindustrial business	200	2	100	7	--	--	--	--	--	--	300	2
Real estate/speculation	8,350	93	200	13	--	--	--	--	--	--	8,550	43
Recreation development	--	--	50	3	--	--	--	--	--	--	50	*
Timber management	*	**	*	**	--	--	--	--	--	--	*	*
Sports/recreation clubs	150	2	800	53	8,700	93	--	--	--	--	9,650	48
Conservation clubs	--	--	--	--	100	1	--	--	*	**	100	1
Youth organizations	--	--	50	3	--	--	*	**	--	--	50	*
Churches, others	--	--	--	--	200	2	--	--	*	**	200	1
Educational institutions	--	--	*	**	--	--	--	--	*	**	50	*
Personal recreation	250	3	100	7	300	4	50	100	--	--	700	4
Nonfarm subtotal	8,950	100	1,500	100	9,300	100	50	100	50	100	19,850	100
Farms	3,100		2,000		--		300		--		5,400	
Total	12,050		3,500		9,300		350		50		25,250	

* Fewer than 25 owners
** Less than 0.5 percent

Table 11.--Estimated acres of commercial forest land in business or group ownerships by nature of business and form of ownership, Michigan, 1981

Nature of business	Form of ownership										All businesses and groups	
	Partnerships		Corporations		Clubs/ass'n		Trusts		Other			
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
	ACRES OWNED											
Nonforest industry	--	--	82,900	25	--	--	--	--	--	--	82,900	10
Nonindustrial business	16,000	10	20,250	6	--	--	--	--	--	--	36,250	4
Real estate/speculation	84,100	52	97,300	30	--	--	--	--	--	--	181,400	22
Recreation development	--	--	8,000	2	--	--	--	--	--	--	8,000	1
Timber management	11,500	7	25,900	8	--	--	--	--	--	--	37,400	5
Sports/recreation clubs	16,550	10	43,750	13	227,150	86	--	--	--	--	287,450	35
Conservation clubs	--	--	--	--	11,500	4	--	--	4,200	29	15,700	2
Youth organizations	--	--	31,000	9	--	--	11,500	47	--	--	42,500	5
Churches, others	--	--	--	--	11,500	4	--	--	8,750	42	20,250	3
Educational institutions	--	--	8,000	2	--	--	--	--	8,000	38	16,000	2
Personal recreation	38,400	23	17,150	5	12,500	5	12,900	53	--	--	80,950	10
Nonfarm subtotal	166,550	100	334,250	100	262,650	100	24,400	100	20,950	100	808,800	100
Farms	107,400		55,650		--		11,500		--		174,550	
Total	273,950		389,900		262,650		35,900		20,950		983,350	

Table 12.--Estimated number of individual owners and acres of commercial forest land owned by occupation and forest survey unit, Michigan, 1981

Occupation	Eastern UP		Western UP		Northern LP		Southern LP		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Professional	2,250	12	4,900	15	18,800	13	21,050	13	47,000	13
Executive	1,700	9	5,700	18	23,250	16	16,950	10	47,600	13
Retired	4,900	26	10,600	33	30,500	21	27,950	17	73,950	20
White collar	1,500	8	2,600	8	3,950	3	16,400	10	24,450	7
Skilled trade	3,700	19	2,350	7	23,850	16	25,050	15	54,950	15
Unskilled laborer	1,200	6	1,450	4	6,100	4	12,050	7	20,800	6
Homemaker	1,100	6	350	1	2,650	2	17,500	11	21,600	6
Farmer	550	3	1,050	3	950	1	13,800	8	16,350	5
Other	50	**	200	1	4,600	3	550	**	5,400	2
No answer	2,150	11	3,100	10	30,950	21	11,150	7	47,350	13
Total	19,100	100	32,300	100	145,600	100	162,450	100	359,450	100
					ACRES OWNED					
Professional	104,350	9	258,600	20	425,150	13	152,050	7	940,150	12
Executive	162,750	15	149,050	11	413,650	12	240,100	12	965,550	12
Retired	317,150	28	350,650	26	942,200	28	464,250	23	2,074,250	27
White collar	91,800	8	78,900	6	241,300	7	120,050	6	532,050	7
Skilled trade	166,900	15	153,450	12	436,600	13	336,200	17	1,093,150	14
Unskilled laborer	79,250	7	78,900	6	195,350	6	136,100	7	489,600	6
Homemaker	45,900	4	30,700	2	68,950	2	40,000	2	185,550	2
Farmer	79,300	7	61,400	5	114,900	3	336,150	17	591,750	8
Other	8,350	1	26,300	2	68,950	2	16,000	**	119,600	2
No answer	66,800	6	135,900	10	436,600	13	184,100	9	823,400	10
Total	1,122,550	100	1,323,850	100	3,343,650	100	2,025,000	100	7,815,050	100

** Less than 0.5 percent

Table 13.--Occupation of individual owners whose forest land is part of an active farm, Michigan, 1981

Occupation	Private Owners		Acres Owned	
	Number	Percent	Number	Percent
Professional	7,450	10	68,700	4
Owner/Executive	2,300	3	97,800	6
Retired	15,150	19	354,300	21
White Collar	11,000	14	90,500	5
Skilled Trade	10,750	14	215,450	13
Homemaker	600	1	16,350	1
Laborer	8,700	11	140,200	8
Farmer	16,350	21	591,700	35
Other	400	1	8,000	**
No Answer	5,050	6	118,400	7
Total	77,750	100	1,701,400	100

** Less than 0.5 percent

Table 14.--Estimated number of individual owners and acres of commercial forest land owned by age class and forest survey unit, Michigan, 1981

Age class Years	Eastern UP		Western UP		Northern LP		Southern LP		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	100	**	50	**	450	**	8,050	5	8,650	2
25-44	5,300	28	5,100	16	39,500	27	48,600	30	98,500	27
45-64	8,200	43	14,550	45	62,700	43	68,400	42	153,850	43
65+	4,800	25	9,450	29	32,550	22	30,800	19	77,600	22
No answer	700	4	3,150	10	10,400	7	6,600	4	20,850	6
Total	19,100	100	32,300	100	145,600	100	162,450	100	359,450	100
					ACRES OWNED					
0-24	4,150	**	4,400	**	11,500	**	16,000	**	36,050	**
25-44	175,250	16	232,350	18	631,950	19	480,250	24	1,519,800	20
45-64	584,250	52	657,500	50	1,528,200	46	888,450	44	3,658,400	47
65+	321,350	29	346,300	26	953,700	29	560,250	28	2,181,600	28
No answer	37,550	3	83,300	6	218,300	6	80,050	4	419,200	5
Total	1,122,550	100	1,323,850	100	3,343,650	100	2,025,000	100	7,815,050	100

**Less than 0.5 percent

Table 15.--Estimated number of individual owners and acres of commercial forest land owned by years of formal education, Michigan, 1981

Education	Individual owners		Sampling error	Acres owned		Sampling error
	Number	Percent	Percent	Number	Percent	Percent
0-8 years	44,700	12	21	1,066,850	14	7
9-12 years	97,100	27	12	2,259,850	29	5
1-4 years of college[1/]	131,950	37	13	2,889,000	37	4
More than 4 years of college	47,450	13	18	1,048,250	13	8
No answer	38,250	11	29	551,100	7	11
Total	359,450	100	7	7,815,050	100	1

[1/] Includes trade school or other formal training beyond high school.

Table 16.--Estimated number of individual owners and acres of commercial forest land owned by annual income class and forest survey unit, Michigan, 1981

Annual income	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Under $10,000	3,500	18	10,100	31	27,250	19	29,100	18	69,950	20
$10-$14,999	2,700	14	7,200	22	11,900	8	17,450	11	39,250	11
$15-$19,999	1,850	10	2,200	7	20,450	14	19,550	12	44,050	12
$20-$24,999	3,100	16	1,850	6	23,400	16	14,700	9	43,050	12
$25-$29,999	1,300	7	1,500	5	6,800	5	24,200	15	33,800	9
$30,000+	4,300	23	3,500	11	20,800	14	35,000	21	63,600	18
No answer	2,350	12	5,950	18	35,000	24	22,450	14	65,750	18
Total	19,100	100	32,300	100	145,600	100	162,450	100	359,450	100
					ACRES OWNED					
Under $10,000	187,800	17	267,400	20	586,000	18	256,100	13	1,297,300	17
$10-$14,999	154,450	14	170,950	13	298,750	9	232,100	11	856,250	11
$15-$19,999	104,300	9	157,800	12	379,150	11	216,150	11	857,400	11
$20-$24,999	112,650	10	127,150	10	310,250	9	224,100	11	774,150	10
$25-$29,999	79,300	7	109,550	8	195,350	6	168,100	8	552,300	7
$30,000+	350,550	31	302,500	23	965,150	29	664,300	33	2,282,500	29
No answer	133,500	12	188,500	14	609,000	18	264,150	13	1,195,150	15
Total	1,122,550	100	1,323,850	100	3,343,650	100	2,025,000	100	7,815,050	100

Table 17.--Estimated number of individual owners and acres of commercial forest land owned by early life environment and forest survey unit, Michigan, 1981

Early life environment	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
City over 100,000	2,200	11	2,600	8	32,850	22	27,800	17	65,450	18
City 10,000-99,999	2,600	14	6,100	19	22,850	16	19,300	12	50,850	14
City less than 10,000	4,950	26	6,900	21	28,050	19	18,350	11	58,250	16
Rural area	3,800	20	9,500	30	24,750	17	27,550	17	65,600	18
Farm	4,650	24	4,000	12	26,150	18	60,050	37	94,850	27
No answer	900	5	3,200	10	10,950	8	9,400	6	24,450	7
Total	19,100	100	32,300	100	145,600	100	162,450	100	359,450	100
					ACRES OWNED					
City over 100,000	96,000	9	157,800	12	654,950	20	248,100	12	1,156,850	15
City 10,000-99,999	150,200	13	162,200	12	517,050	15	192,100	9	1,021,550	13
City less than 10,000	237,850	21	337,550	25	528,550	16	160,100	8	1,264,050	16
Rural area	275,450	25	276,150	21	402,150	12	376,200	19	1,329,950	17
Farm	317,150	28	311,250	24	976,650	29	920,450	45	2,525,500	32
No answer	45,900	4	78,900	6	264,300	8	128,050	6	517,150	7
Total	1,122,550	100	1,323,850	100	3,343,650	100	2,025,000	100	7,815,050	100

Table 18.--Estimated number of private ownership units and acres of commercial forest land owned by primary and secondary reason for owning, Michigan, 1981

Reason for owning	Primary reason		Secondary reason	
	Number	Percent	Number	Percent
	OWNERS			
Land investment	75,300	20	8,950	2
Nonmotor recreation	40,750	11	32,350	8
Motorized recreation	2,350	1	15,200	4
Timber production	5,750	1	9,150	2
Farm or domestic use	54,200	14	33,600	9
Esthetic enjoyment	37,950	10	57,250	15
Part of farm	37,150	10	37,600	10
Part of residence	75,450	20	17,150	4
Second home, cabin	20,100	5	13,000	3
Mineral value	4,400	1	8,500	2
Other	5,750	1	800	**
No answer	25,550	6	25,550	6
No second reason	--	--	125,600	32
Total	384,700	100	384,700	100
	ACRES OWNED			
Land investment	1,472,000	17	581,500	7
Nonmotor recreation	2,033,300	23	1,323,700	15
Motorized recreation	36,600	**	531,950	6
Timber production	499,300	6	559,500	7
Farm or domestic use	1,011,950	12	694,900	8
Esthetic enjoyment	832,500	9	1,023,450	11
Part of farm	750,150	8	426,000	5
Part of residence	944,150	11	359,550	4
Second home, cabin	488,400	6	388,250	4
Mineral value	170,550	2	349,200	4
Other	297,250	3	116,500	1
No answer	262,250	3	262,250	3
No second reason	--	--	2,181,650	25
Total	8,798,400	100	8,798,400	100

** Less than 0.5 percent

Table 19.--Estimated number of private ownership units and acres of commercial forest land owned by primary reason for owning by harvesters and nonharvesters, Michigan, 1981

Primary reason for owning	Owners		Sampling error	Acres owned		Sampling error
	Number	Percent	Percent	Number	Percent	Percent
			MAJOR HARVESTERS			
Land investment	26,900	30	40	538,750	14	11
Nonmotor recreation	12,850	14	16	1,043,600	26	8
Motorized recreation	150	**	84	8,550	**	71
Timber production	3,750	4	23	421,950	11	13
Farm or domestic use	12,200	14	18	518,150	13	12
Esthetic enjoyment	4,800	5	34	183,600	5	20
Part of farm	15,650	17	23	433,100	11	13
Part of residence	8,300	9	17	379,450	10	12
Second home, cabin	3,050	3	33	193,750	5	19
Mineral value	300	**	60	63,550	2	45
Other	1,850	2	43	88,750	2	28
No answer	850	1	54	56,800	1	33
Total	90,650	100	12	3,930,000	100	3
			MINOR AND NONHARVESTERS[1/]			
Land investment	48,400	18	24	933,250	20	8
Nonmotor recreation	27,750	10	15	973,800	21	8
Motorized recreation	2,200	1	39	28,050	1	50
Timber production	2,000	1	50	77,400	2	28
Farm or domestic use	41,500	15	29	474,300	10	12
Esthetic enjoyment	33,150	12	19	648,900	14	11
Part of farm	21,500	8	22	317,050	7	15
Part of residence	67,150	25	25	564,750	12	11
Second home, cabin	17,000	6	33	290,450	6	15
Mineral value	4,150	2	67	107,000	2	28
Other	3,850	1	24	208,450	4	18
No answer	3,250	1	63	70,400	1	38
Total	271,900	100	9	4,693,800	100	3
			ALL RESPONDING OWNERS[2/]			
Land investment	75,300	21	21	1,472,000	17	6
Nonmotor recreation	40,600	11	11	2,017,400	23	5
Motorized recreation	2,350	1	81	36,600	**	41
Timber production	5,750	2	23	499,350	6	12
Farm or domestic use	53,700	15	23	992,450	12	8
Esthetic enjoyment	37,950	10	17	832,500	10	9
Part of farm	37,150	10	16	750,150	9	10
Part of residence	75,450	21	21	944,200	11	3
Second home, cabin	20,050	5	29	484,200	6	11
Mineral value	4,450	1	61	170,550	2	23
Other	5,700	2	21	297,200	3	15
No answer	4,100	1	50	127,200	1	25
Total	362,550	100	7	8,623,800	100	1

1/ Includes nonharvesters and those who harvest very small amounts of products or firewood for their own use.

2/ Excludes those who did not answer harvest question.

** Less than 0.5 percent

Table 20.--Estimated number of private ownership units and acres of commercial forest land owned by primary reason for owning and expected time of future harvest, Michigan, 1981

Reason for owning	Expected time of future harvest: Next 10 years		Indefinite		Never		No answer		All owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Land investment	20,100	23	14,600	14	36,200	24	4,450	10	75,350	20
Nonmotor recreation	7,450	9	18,700	18	13,600	9	1,000	2	40,750	11
Motorized recreation	2,200	3	150	**	--	--	--	--	2,350	1
Timber production	3,050	3	2,400	2	150	**	150	**	5,750	1
Farm or domestic use	24,000	28	10,050	10	18,450	12	1,650	4	54,200	14
Esthetic enjoyment	3,900	4	17,850	18	15,450	10	750	2	37,950	10
Part of farm	8,200	10	19,000	19	8,350	5	1,650	4	37,200	10
Part of residence	13,750	16	8,650	9	44,600	29	8,500	19	75,450	20
Second home/cabin	1,400	2	6,650	6	11,850	8	150	**	20,050	5
Mineral value	400	1	650	1	3,000	2	350	1	4,400	1
Other	700	1	2,350	2	1,350	1	1,300	3	5,700	1
No answer	200	**	500	**	200	**	24,650	55	25,550	6
Total	85,350	100	101,550	100	153,200	100	44,600	100	384,700	100
					ACRES OWNED					
Land investment	473,450	15	535,050	16	419,500	23	44,050	7	1,472,050	17
Nonmotor recreation	781,800	25	730,000	23	416,150	23	105,350	17	2,033,300	23
Motorized recreation	27,850	1	8,750	**	--	--	--	--	36,600	**
Timber production	366,750	11	98,100	3	23,000	1	11,500	2	499,350	6
Farm or domestic use	457,850	15	368,000	11	157,850	8	28,250	4	1011,950	11
Esthetic enjoyment	156,550	5	446,300	14	213,100	12	16,550	3	832,500	9
Part of farm	189,000	6	398,200	12	116,050	6	46,850	7	750,100	9
Part of residence	309,650	10	238,300	8	249,750	14	146,500	22	944,200	11
Second home/cabin	177,550	6	173,750	5	124,350	7	12,700	2	488,350	6
Mineral value	46,650	2	71,750	2	32,650	2	19,500	3	170,550	2
Other	75,650	2	129,200	4	60,500	3	31,900	5	297,250	3
No answer	29,600	1	27,150	1	20,050	1	185,400	28	262,200	3
Total	3,092,350	100	3,224,550	100	1,832,950	100	648,550	100	8,798,400	100

**Less than 0.5 percent

Table 21.--Estimated number of private ownership units and acres of commercial forest land owned by primary reason for owning and forest survey unit, Michigan, 1981

Primary reason for owning	Eastern UP			Western UP			Northern LP			Southern LP			All owners		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
							OWNERS								
Land investment	2,900	14	21	3,350	10	24	39,800	27	36	29,300	16	35	75,350	20	21
Nonmotor	5,200	26	21	5,300	16	14	18,650	13	19	11,600	6	30	40,750	11	11
Motorized recreation	100	**	79	150	**	83	100	**	100	2,000	1	100	2,350	1	81
Timber production	300	2	58	850	3	34	1,750	1	34	2,850	2	43	5,750	1	23
Farm or domestic use	1,900	9	32	7,900	24	59	17,050	12	30	27,350	15	33	54,200	14	23
Esthetic enjoyment	2,200	11	47	1,850	6	28	16,050	11	25	17,850	10	29	37,950	10	17
Part of farm	600	3	35	700	2	34	2,600	2	40	33,300	18	18	37,200	10	16
Part of residence	3,950	20	26	4,300	13	31	27,300	18	45	39,900	22	32	75,450	20	21
Second home, cabin	1,950	10	25	5,150	16	49	10,400	7	57	2,550	1	70	20,050	5	29
Mineral value	100	1	100	300	1	54	950	1	50	3,050	2	87	4,400	1	61
Other	400	2	47	800	2	32	2,900	2	41	1,600	1	44	5,700	1	21
No answer	450	2	54	2,100	6	58	10,400	7	60	12,600	7	68	25,550	6	40
Total	20,050	100	10	32,750	100	18	147,950	100	15	183,950	100	12	384,700	100	7
							ACRES OWNED								
Land investment	242,050	19	13	267,400	18	13	666,450	17	13	296,150	13	16	1,472,050	17	6
Nonmotor recreation	367,250	29	10	381,400	26	11	1,068,550	28	10	216,100	10	19	2,033,300	23	5
Motorized recreation	8,350	1	71	8,750	1	71	11,500	**	100	8,000	**	100	36,600	**	41
Timber production	79,300	6	23	144,650	10	19	195,350	5	25	80,050	4	32	499,350	5	12
Farm or domestic use	100,150	8	20	114,000	8	19	413,600	11	16	384,200	17	14	1,011,950	12	8
Esthetic enjoyment	58,400	5	27	100,850	7	21	425,150	11	16	248,100	11	18	832,500	9	9
Part of farm	54,250	4	28	48,200	3	30	103,400	3	33	544,250	24	12	750,100	9	10
Part of residence	154,400	12	16	153,450	10	17	356,200	9	18	280,150	12	17	944,200	11	8
Second home, cabin	129,350	10	19	105,200	7	20	229,800	6	22	24,000	1	58	488,350	6	11
Mineral value	4,150	**	100	21,900	2	45	80,450	2	41	64,050	3	41	170,550	2	23
Other	37,550	3	33	65,750	5	26	137,900	4	29	56,050	2	38	297,250	3	15
No answer	33,400	3	38	39,450	3	33	149,350	4	29	40,000	2	45	262,200	3	17
Total	1,268,600	100	.82	1,451,000	100	.87	3,837,700	100	.50	2,241,100	100	1.63	8,798,400	100	.68

** Less than 0.5 percent

Table 22.--Estimated number of private ownership units and acres of commercial forest land owned by primary benefit received in the last 5 years and harvest history, Michigan, 1981

Primary benefit	Harvest history: Major harvest Number	Major harvest Percent	Minor harvest Number	Minor harvest Percent	Did not harvest Number	Did not harvest Percent	No answer Number	No answer Percent	All owners Number	All owners Percent
					OWNERS					
Land investment	18,850	21	5,600	7	51,850	27	--	--	76,300	20
Nonmotor recreation	14,800	16	11,150	14	25,100	13	150	1	51,200	13
Motorized recreation	50	**	100	**	1,400	1	--	--	1,550	**
Timber income	5,600	6	850	1	--	--	--	--	6,450	2
Farm or domestic use	10,550	12	28,900	36	12,200	6	500	2	52,150	14
Esthetic enjoyment	13,300	15	22,050	27	51,400	27	--	--	86,750	23
No important benefit	22,550	25	4,050	5	20,900	11	50	**	47,550	12
Other	3,700	4	7,250	9	24,000	13	--	--	34,950	9
No answer	1,250	1	400	**	4,700	2	21,450	97	27,800	7
Total	90,650	100	80,350	100	191,550	100	22,150	100	384,700	100
					ACRES OWNED					
Land investment	865,650	22	133,450	10	955,550	28	--	--	1,954,650	22
Nonmotor recreation	1,064,800	27	253,400	20	837,750	24	15,850	9	2,176,800	25
Motorized recreation	11,500	**	8,550	1	45,950	1	--	--	66,000	1
Timber income	410,700	11	20,400	2	--	--	--	--	431,100	5
Farm or domestic use	505,800	13	301,350	24	119,300	3	19,500	11	945,950	11
Esthetic enjoyment	554,400	14	387,700	31	809,900	24	--	--	1,752,000	20
No important benefit	286,050	7	72,450	6	408,250	12	4,200	3	770,950	9
Other	153,400	4	81,500	6	158,650	5	--	--	393,550	4
No answer	77,700	2	4,400	**	90,250	3	135,050	77	307,400	3
Total	3,930,000	100	1,268,200	100	3,425,600	100	174,600	100	8,798,400	100

**Less than 0.5 percent

Table 23.--Estimated number of private ownership units and acres of commercial forest land owned by primary benefits expected in the next 5 years and harvest history, Michigan, 1981

Primary benefit	Harvest history: Major harvest Number	Major harvest Percent	Minor harvest Number	Minor harvest Percent	Did not harvest Number	Did not harvest Percent	No answer Number	No answer Percent	All owners Number	All owners Percent
					OWNERS					
Land investment	29,350	32	8,950	11	58,400	30	0	0	96,700	25
Nonmotor recreation	13,000	14	8,200	10	28,700	15	150	1	50,050	13
Motorized recreation	--	--	50	**	1,500	1	--	--	1,550	**
Timber income	4,100	5	1,150	1	1,200	1	50	**	6,500	2
Farm or domestic use	11,700	13	28,450	35	7,400	4	250	1	47,800	13
Esthetic enjoyment	14,850	16	19,900	25	42,500	22	250	1	77,500	20
No important benefit	4,250	5	4,350	6	16,100	8	--	--	24,700	6
Retirement/ emergency income	2,500	3	1,850	2	11,050	6	--	--	15,400	4
Develop for other use	4,250	5	1,650	2	1,450	1	--	--	7,350	2
Other	4,750	5	4,500	6	18,450	10	--	--	27,700	7
No answer	1,900	2	1,300	2	4,800	2	21,450	97	29,450	8
Total	90,650	100	80,350	100	191,550	100	22,150	100	384,700	100
					ACRES OWNED					
Land investment	890,550	23	198,250	15	1,008,850	29	--	--	2,097,650	24
Nonmotor rec.	1,027,500	26	242,400	19	763,850	22	15,900	9	2,049,650	23
Motorized rec.	--	--	8,550	1	43,250	1	--	--	51,800	1
Timber income	323,650	8	36,050	3	52,200	2	4,150	2	416,050	5
Farm or domestic use	462,300	12	268,600	21	134,900	4	8,000	5	873,800	10
Esthetic enjoyment	497,750	12	327,100	26	700,750	20	11,500	7	1,537,100	17
No important benefit	205,050	5	36,750	3	265,800	8	--	--	507,600	6
Retirement/ emergency income	149,000	4	52,050	4	146,350	4	--	--	347,400	4
Develop for other use	46,850	1	12,400	1	55,550	2	--	--	114,800	1
Other	222,100	6	73,700	6	167,000	5	--	--	462,800	5
No answer	105,250	3	12,350	1	87,100	3	135,050	77	339,750	4
Total	3,930,000	100	1,268,200	100	3,425,600	100	174,600	100	8,798,400	100

**Less than 0.5 percent

Table 24.--Estimated number of private ownership units and acres of commercial forest land owned by primary benefit expected in next 5 years and expected time of future harvest, Michigan, 1981

Primary benefit	Expected time of future harvest: Next 10 years Number	Next 10 years Percent	Indefinite Number	Indefinite Percent	Never Number	Never Percent	No answer Number	No answer Percent	All owners Number	All owners Percent
					OWNERS					
Land investment	24,100	28	25,500	25	41,500	27	5,600	13	96,700	25
Nonmotor recreation	6,400	7	18,550	18	23,650	16	1,450	3	50,050	13
Motorized recreation	250	**	650	1	650	**	--	--	1,550	**
Timber Income	4,350	5	1,450	1	400	**	300	1	6,500	2
Farm or domestic use	21,050	25	11,400	11	11,450	7	3,900	9	47,800	12
Esthetic enjoyment	21,150	25	23,900	24	30,300	20	2,150	5	77,500	20
No important benefit	750	1	9,550	10	12,250	8	2,150	5	24,700	7
Retirement/emer. income	3,250	4	2,350	2	9,600	6	200	**	15,400	4
Develop for other use	300	**	300	**	6,600	4	150	**	7,350	2
Other	3,550	4	7,200	7	16,200	11	750	2	27,700	7
No answer	200	**	700	1	600	**	27,950	62	29,450	8
Total	85,350	100	101,550	100	153,200	100	44,600	100	384,700	100
					ACRES OWNED					
Land investment	762,200	25	778,400	24	442,800	24	114,250	18	2,097,650	24
Nonmotor rec.	752,350	24	733,150	23	467,150	26	97,000	15	2,049,650	23
Motorized rec.	20,250	1	20,050	1	11,500	1	--	--	51,800	1
Timber income	304,500	10	69,100	2	22,950	1	19,500	3	416,050	5
Farm or domestic use	402,800	13	276,650	9	154,450	8	39,900	6	873,800	10
Esthetic enjoy.	439,500	14	707,000	22	310,950	17	79,650	12	1,537,100	17
No important ben.	65,000	2	220,200	7	159,000	9	63,400	10	507,600	6
Retirement/emer. income	103,200	3	167,700	5	68,500	4	8,000	1	347,400	4
Develop for other use	43,150	1	31,750	1	35,500	2	4,400	1	114,800	1
Other	161,200	5	176,850	5	109,100	6	15,650	3	462,800	5
No answer	38,200	1	43,700	1	51,050	3	206,800	31	339,750	4
Total	3,092,350	100	3,224,550	100	1,832,950	100	648,550	100	8,798,400	100

** Less than 0.5 percent

Table 25.--Estimated number of private ownership units and acres of commercial forest land by form of ownership and harvest history, Michigan, 1981

Form of ownership	Harvest history: Major harvest Number	Major harvest Percent	Minor harvest Number	Minor harvest Percent	Did not harvest Number	Did not harvest Percent	No answer Number	No answer Percent	All owners Number	All owners Percent
					OWNERS					
Individual	88,150	23	77,950	20	179,200	47	14,150	4	359,450	93
Part/Corp.	1,750	**	2,400	1	11,400	3	*	**	15,550	4
Other	750	**	*	**	950	**	8,000	2	9,700	3
Total	90,650	23	80,350	21	191,550	50	22,150	6	384,700	100
					ACRES OWNED					
Individual	3,335,650	38	1,207,800	14	3,109,400	35	162,200	2	7,815,050	89
Part/Corp.	354,250	4	56,250	**	248,950	3	4,400	**	663,850	7
Other	240,100	3	4,150	**	67,250	1	8,000	**	319,500	4
Total	3,930,000	45	1,268,200	14	3,425,600	39	174,600	2	8,798,400	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 26.--Estimated number of major harvesters and acres of commercial forest land owned by reason for harvesting and form of ownership, Michigan, 1981

Reason for harvesting	Form of ownership							
	Individual		Partnership Corporation		Other		All forms	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				MAJOR HARVESTERS				
For own use	10,100	12	*	**	*	**	10,100	11
Mature timber	16,500	19	350	20	400	53	17,250	19
Thinning, improvement	15,400	18	400	23	150	20	15,950	18
Salvage	6,450	7	400	23	--	--	6,850	8
Good price	7,000	8	100	6	--	--	7,100	8
Clear land	17,800	20	250	14	--	--	18,050	20
Needed money	11,600	13	250	14	100	13	11,950	13
Other	1,250	1	--	--	50	7	1,300	1
No answer	2,050	2	--	--	50	7	2,100	2
Total	88,150	100	1,750	100	750	100	90,650	100
				ACRES OWNED				
For own use	523,800	16	23,000	7	11,500	5	558,300	14
Mature timber	1,100,600	33	109,800	31	99,400	41	1,309,800	33
Thinning, improvement	503,700	15	90,350	26	66,500	28	660,550	17
Salvage	259,250	8	46,650	13	--	--	305,900	8
Good price	118,350	3	39,900	11	--	--	158,250	4
Clear land	123,350	4	32,350	9	--	--	155,700	4
Needed money	525,000	16	12,200	3	8,000	3	545,200	14
Other	129,900	4	--	--	34,450	14	164,350	4
No answer	51,700	1	--	--	20,250	9	71,950	2
Total	3,335,650	100	354,250	100	240,100	100	3,930,000	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 27.--Estimated number of private ownership units on which products have been harvested and acres of commercial forest land owned by reason for harvesting and forest survey unit, Michigan, 1981

Reason for harvesting	Forest Survey Unit								All units	
	Eastern UP		Western UP		Northern LP		Southern LP			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					MAJOR HARVESTERS					
For own use	1,650	21	600	7	3,600	10	4,250	11	10,100	11
Timber mature	2,100	26	2,700	33	5,350	15	7,100	18	17,250	19
Thin/improvement cut	700	9	1,500	18	4,250	12	9,500	25	15,950	18
Salvage	700	9	500	6	1,400	4	4,250	11	6,850	8
Offered good price	250	3	500	6	4,150	12	2,200	6	7,100	8
Land clearing	1,050	13	150	2	13,950	39	2,900	7	18,050	20
Needed money	1,050	13	1,950	24	1,500	4	7,450	19	11,950	13
Other	400	5	*	**	900	2	--	--	1,300	1
No answer	100	1	250	3	700	2	1,050	3	2,100	2
Total	8,000	100	8,150	100	35,800	100	38,700	100	90,650	100
					ACRES OWNED					
For own use	87,650	13	43,850	6	298,750	18	128,050	14	558,300	14
Timber mature	221,150	33	245,500	35	563,000	35	280,150	31	1309,800	33
Thin/improvement cut	112,700	17	131,500	19	264,300	16	152,050	17	660,550	17
Salvage	62,600	9	43,850	6	103,400	6	96,050	10	305,900	8
Offered good price	29,200	4	35,050	5	45,950	3	48,050	5	158,250	4
Land clearing	29,200	4	17,550	2	68,950	4	40,000	4	155,700	4
Needed money	100,150	15	166,550	24	126,400	8	152,100	17	545,200	14
Other	29,200	4	8,750	1	126,400	8	--	--	164,350	4
No answer	8,350	1	13,150	2	34,450	2	16,000	2	71,950	2
Total	680,200	100	705,750	100	1,631,600	100	912,450	100	3,930,000	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 28.--Estimated number of private ownership units and acres of commercial forest land owned by farm and nonfarm, harvest history, and forest survey unit, Michigan, 1981

Harvest history	Private owners				Acres owned			
	Farm		Nonfarm		Farm		Nonfarm	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
EASTERN UP								
Major harvest	1,650	59	6,350	37	150,250	74	529,950	50
Minor harvest	700	25	2,450	14	20,900	10	125,200	12
No harvest	450	16	8,200	48	33,350	16	400,600	37
No answer	--	--	250	1	--	--	8,350	1
Total	2,800	100	17,250	100	204,500	100	1,064,100	100
WESTERN UP								
Major harvest	950	36	7,200	24	105,200	62	600,550	47
Minor harvest	1,150	43	9,650	32	39,450	23	157,850	12
No harvest	550	21	11,350	38	26,300	15	495,350	39
No answer	--	--	1,900	6	--	--	26,300	2
Total	2,650	100	39,100	100	170,950	100	1,280,050	100
NORTHERN UP								
Major harvest	6,850	44	28,950	22	356,200	66	1,275,400	38
Minor harvest	4,450	28	19,100	15	45,950	8	390,650	12
No harvest	4,300	28	77,150	58	137,900	26	1,539,700	47
No answer	--	--	7,150	5	--	--	91,900	3
Total	15,600	100	132,350	100	540,050	100	3,297,650	100
SOUTHERN LP								
Major harvest	20,350	33	18,350	15	520,250	54	392,200	31
Minor harvest	17,050	27	25,800	21	224,100	23	264,100	20
No harvest	24,700	40	64,850	53	216,100	23	576,300	45
No answer	--	--	12,850	11	--	--	48,050	4
Total	62,100	100	121,850	100	960,450	100	1,280,650	100
ALL UNITS								
Major harvest	29,800	36	60,850	20	1,131,900	60	2,798,100	40
Minor harvest	23,350	28	57,000	19	330,400	18	937,800	14
No harvest	30,000	36	161,550	54	413,650	22	3,011,950	44
No answer	--	--	22,150	7	--	--	174,600	2
Total	83,150	100	301,550	100	1,875,950	100	6,922,450	100

Table 29.--Estimated number of private ownership units that have had no harvest and acres of commercial forest land owned by reason for not harvesting and form of ownership, Michigan, 1981[1/]

Reason for not harvesting	Individual		Part./Corp.		Other		All nonharvesters	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				NONHARVESTERS				
Timber immature	36,050	14	150	1	150	16	36,350	13
No market	2,100	1	--	--	--	--	2,100	1
Price too low	2,400	1	150	1	--	--	2,550	1
Poor quality	17,250	7	1,600	12	--	--	18,850	7
Low volume	36,350	14	8,050	58	--	--	44,400	16
Small area	5,500	2	--	--	--	--	5,500	2
Selling land	8,650	3	300	2	*	**	8,950	3
Land in estate	1,800	1	--	--	--	--	1,800	1
Destroy hunting	14,950	6	150	1	200	21	15,300	6
Ruin scenery	34,050	13	700	5	500	53	35,250	13
Distrust loggers	1,600	1	*	**	--	--	1,600	1
Opposed to harvest	11,100	4	--	--	--	--	11,100	4
Fire hazard	50	**	--	--	--	--	50	**
Saving for retirement	9,400	4	350	3	--	--	9,750	4
Legacy for heirs	8,700	3	--	--	--	--	8,700	3
Other	9,050	3	250	2	100	10	9,400	3
No answer	58,150	23	2,100	15	*	**	60,250	22
Total	257,150	100	13,800	100	950	100	271,900	100
				ACRES OWNED				
Timber immature	632,600	15	57,200	19	12,750	18	702,550	15
No market	55,200	1	--	--	--	--	55,200	1
Price too low	120,050	3	20,050	7	--	--	140,100	3
Poor quality	182,200	4	8,000	3	--	--	190,200	4
Low volume	154,750	4	12,150	4	--	--	166,900	4
Small area	66,500	2	--	--	--	--	66,500	1
Selling land	161,650	4	70,200	23	4,400	6	236,250	5
Land in estate	23,650	**	--	--	--	--	23,650	**
Destroy hunting	518,100	12	12,200	4	4,150	6	534,450	11
Ruin scenery	462,900	11	44,250	14	34,450	48	541,600	12
Distrust loggers	114,700	3	8,000	3	--	--	122,700	3
Opposed to harvest	101,850	2	--	--	--	--	101,850	2
Fire hazard	4,400	**	--	--	--	--	4,400	**
Saving for retirement	303,800	7	12,200	4	--	--	316,000	7
Legacy for heirs	181,850	4	--	--	--	--	181,850	4
Other	265,600	6	28,750	9	11,500	16	305,850	7
No answer	967,400	22	32,200	10	4,150	6	1,003,750	21
Total	4,317,200	100	305,200	100	71,400	100	4,693,800	100

[1/] Includes ownerships that harvested small amounts of products or firewood for their own use.

* Fewer than 25 owners
** Less than 0.5 percent

Table 30.--Estimated number of private ownership units that have had no harvest and acres of commercial forest land owned by reason for not harvesting and forest survey unit, Michigan, 1981[1/]

Reason for not harvesting	Eastern UP		Western UP		Northern LP		Southern LP		All nonharvesters	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Timber immature	1,550	13	2,000	9	13,450	13	19,350	15	36,350	13
No market	200	2	50	**	250	**	1,600	1	2,100	1
Price too low	350	3	150	1	900	1	1,150	1	2,550	1
Poor quality	200	2	1,250	6	9,400	9	8,000	6	18,850	7
Low volume	800	7	50	**	19,800	19	23,750	18	44,400	16
Small area	500	4	--	--	4,600	5	400	**	5,500	2
Selling land	650	6	300	1	2,300	2	5,700	4	8,950	3
Land in estate	100	1	--	--	350	**	1,350	1	1,800	1
Destroy hunting	650	5	3,450	15	9,450	9	1,750	1	15,300	6
Ruin scenery	400	3	2,000	9	10,250	10	22,600	17	35,250	13
Distrust loggers	300	3	100	1	850	1	350	**	1,600	1
Opposed to harvest	--	--	50	**	2,350	2	8,700	7	11,100	4
Fire hazard	--	--	50	**	--	--	--	--	50	**
Saving for retirement	1,100	9	750	3	3,450	3	4,450	4	9,750	4
Legacy for heirs	150	1	300	1	4,350	4	3,900	3	8,700	3
Other	1,550	13	1,250	6	2,200	2	4,400	3	9,400	3
No answer	3,300	28	10,950	48	21,050	20	24,950	19	60,250	22
Total	11,800	100	22,700	100	105,000	100	132,400	100	271,900	100
					ACRES OWNED					
Timber immature	66,800	12	135,900	19	275,750	13	224,100	17	702,550	15
No market	8,350	1	4,350	1	34,500	2	8,000	1	55,200	1
Price too low	20,850	4	26,300	4	68,950	3	24,000	2	140,100	3
Poor quality	16,700	3	17,550	2	91,900	4	64,050	5	190,200	4
Low volume	25,050	4	4,350	**	57,450	3	80,050	6	166,900	4
Small area	12,550	2	--	--	45,950	2	8,000	1	66,500	1
Selling land	54,250	9	35,100	5	114,900	5	32,000	2	236,250	5
Land in estate	4,150	1	--	--	11,500	1	8,000	1	23,650	**
Destroy hunting	45,900	8	61,350	8	379,150	18	48,050	4	534,450	11
Ruin scenery	25,050	4	65,750	9	298,750	14	152,050	12	541,600	12
Distrust loggers	20,850	4	4,400	1	57,450	3	40,000	3	122,700	3
Opposed to harvest	--	--	4,400	1	57,450	3	40,000	3	101,850	2
Fire hazard	--	--	4,400	1	--	--	--	--	4,400	**
Saving for retirement	54,250	9	65,750	9	91,950	4	104,050	8	316,000	7
Legacy for heirs	20,850	4	17,550	2	103,400	5	40,050	3	181,850	4
Other	45,900	8	57,000	8	114,900	5	83,050	7	305,850	7
No answer	158,550	27	214,800	30	310,250	15	320,150	25	1,003,750	21
Total	580,050	100	718,950	100	2,114,200	100	1,280,600	100	4,693,800	100

1/ Includes ownerships that harvested small amounts of products or firewood for their own use.

** Less than 0.5 percent

Table 31.--Estimated number of individual owners and acres of commercial forest land owned by occupation and expected time of future harvest, Michigan, 1981

Occupation	Expected time of future harvest: 1-10 years Number	1-10 years Percent	Indefinite Number	Indefinite Percent	Never Number	Never Percent	No answer Number	No answer Percent	All individual owners Number	All individual owners Percent
					OWNERS					
Professional	7,200	15	18,250	39	21,250	45	300	1	47,000	100
Executive	23,050	47	7,000	15	16,450	35	1,100	2	47,600	100
Retired	11,850	16	24,900	33	28,700	39	8,500	11	73,950	100
White collar	3,550	15	4,700	20	16,050	65	150	**	24,450	100
Skilled trade	15,150	27	23,650	43	12,850	23	3,300	6	54,950	100
Homemaker	1,650	8	900	5	18,750	87	300	1	21,600	100
Unskilled labor	6,550	31	6,850	33	6,000	29	1,400	7	20,800	100
Farmer	7,850	48	6,250	39	1,900	11	350	2	16,350	100
Other	200	4	2,250	41	550	10	2,400	45	5,400	100
No answer	5,850	12	4,600	10	19,800	42	17,100	36	47,350	100
Total	82,900	23	99,350	28	142,300	40	34,900	10	359,450	100
					ACRES OWNED					
Professional	342,150	36	419,950	45	165,100	18	12,950	1	940,150	100
Executive	358,050	37	342,150	35	206,650	22	58,700	6	965,550	100
Retired	557,750	27	820,850	39	538,150	26	157,500	8	2,074,250	100
White collar	235,550	44	179,350	34	101,500	19	15,650	3	532,050	100
Skilled trade	369,300	34	498,450	45	185,050	17	40,350	4	1,093,150	100
Homemaker	65,200	34	44,250	24	63,700	36	12,400	6	185,550	100
Unskilled labor	151,900	32	180,800	37	118,050	24	38,850	8	489,600	100
Farmer	269,450	46	258,750	44	39,900	6	23,650	4	591,750	100
Other	21,150	16	51,800	43	23,650	21	23,000	20	119,600	100
No answer	221,850	27	156,350	18	236,000	29	209,200	25	823,400	100
Total	2,592,350	33	2,952,700	38	1,677,750	21	592,250	7	7,815,050	

** Less than 0.5 percent

Table 32.--Estimated number of private ownership units and acres of commercial forest land owned by size class and expected time of future harvest and size class of ownership, Michigan, 1981

Expected time of future harvest	Size class of ownership (acres): 1 - 49 acres Number	1 - 49 acres Percent	50 - 99 acres Number	50 - 99 acres Percent	100-499 acres Number	100-499 acres Percent	500+ acres Number	500+ acres Percent	All classes Number	All classes Percent
					OWNERS					
1 - 10 years	71,850	21	7,200	32	5,500	38	800	68	85,350	22
Indefinite	85,800	25	9,100	40	6,350	44	300	20	101,550	26
Never	146,550	42	4,650	20	1,900	13	100	8	153,200	40
No answer	42,100	12	1,700	8	750	5	50	4	44,600	12
Total	346,300	100	22,650	100	14,500	100	1,250	100	384,700	100
					ACRES OWNED					
1 - 10 years	864,700	23	505,750	33	1,007,700	41	714,200	67	3,092,350	35
Indefinite	1,361,850	37	629,700	40	989,000	40	244,000	22	3,224,550	37
Never	1,119,750	30	303,400	20	323,950	13	85,850	8	1,832,950	21
No answer	363,000	10	116,350	7	137,650	6	31,550	3	648,550	7
Total	3,709,300	100	1,555,200	100	2,458,300	100	1,075,600	100	8,798,400	100

Table 33.--Estimated number of private ownership units on which timber has been harvested and acres of commercial forest land owned by method of selecting timber and individual selecting timber, Michigan, 1981

Method of selecting timber	Individual selecting timber							All harvesters		
	Landowner	Forester	Friend or neighbor	Buyer	Landowner & forester	Landowner & buyer	No answer	Number	Percent	Sampling error %
					MAJOR HARVESTERS					
Selection	19,800	3,400	600	3,900	2,900	3,400	150	34,150	38	27
Diameter limit	10,400	1,650	500	6,000	750	1,900	--	21,200	23	12
Clearcutting	2,350	400	--	1,050	50	300	--	4,150	5	28
Land clearing	2,750	--	*	50	--	--	--	2,800	3	37
Other	7,750	100	300	1,900	350	250	450	11,100	12	30
Combination	50	--	--	--	--	--	--	50	**	74
Don't know	4,900	*	3,950	3,750	--	550	50	13,200	15	41
No answer	1,550	50	--	350	--	--	2,050	4,000	4	30
Total	49,550	5,600	5,350	17,000	4,050	6,400	2,700	90,650	100	12
					ACRES OWNED					
Selection	432,400	375,150	19,850	188,150	141,150	118,200	8,550	1,283,450	32	7
Diameter limit	572,600	110,200	24,400	243,050	51,150	97,650	--	1,099,050	26	7
Clearcutting	183,500	89,000	--	55,600	65,450	35,500	--	429,050	10	13
Land clearing	130,350	--	23,000	4,150	--	--	--	157,500	5	21
Other	328,200	43,250	8,000	59,250	27,850	31,750	11,450	509,750	15	12
Combination	8,750	--	--	--	--	--	--	8,750	**	71
Don't know	77,000	8,750	20,050	125,650	--	11,500	12,950	255,900	7	16
No answer	55,000	15,650	--	21,150	--	--	94,750	186,550	5	20
	1,787,800	642,000	95,300	697,000	285,600	294,600	127,700	3,930,000	100	3

* Fewer than 25 owners
** Less than 0.5 percent

Table 34.--Estimated number of private ownership units on which products have been harvested and acres of commercial forest land owned by timber product harvested and size class of ownership, Michigan, 1981[1/]

Timber product	Size class of ownership (acres)								All harvesters	
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					MAJOR HARVESTERS					
Sawlogs	28,850	40	4,750	48	4,600	59	350	37	38,550	43
Veneer logs	5,300	7	1,350	14	1,150	15	100	11	7,900	9
Pulpwood	10,450	15	3,950	40	3,800	49	550	58	18,750	21
Posts, poles, pilings	4,100	6	1,400	14	1,600	21	50	5	7,150	8
Tie bolts	100	**	200	2	250	3	*	**	600	1
Christmas trees	2,750	4	1,200	13	800	10	100	11	4,850	5
Firewood	34,600	48	4,300	44	3,500	45	450	47	42,850	47
Other	2,350	3	100	1	200	3	*	**	2,650	3
Don't know	6,100	8	900	9	500	6	50	5	7,550	8
Total	72,050		9,850		7,800		950		90,650	
					ACRES OWNED					
Sawlogs	608,000	56	336,000	49	801,500	59	412,650	52	2,158,150	55
Veneer logs	89,700	8	94,150	14	208,650	15	154,000	19	546,500	14
Pulpwood	180,100	17	282,150	41	704,850	52	599,600	75	1,766,700	45
Posts, poles, pilings	118,200	11	38,300	13	260,400	19	85,400	11	552,300	14
Tie bolts	4,400	**	12,700	2	53,700	4	19,850	2	90,650	2
Christmas trees	48,450	4	79,100	12	111,100	8	59,150	7	297,800	8
Firewood	402,700	37	305,600	45	592,500	43	278,600	35	1,579,400	40
Other	48,250	4	8,550	1	48,450	4	8,550	1	113,800	3
Don't know	140,050	13	60,050	9	89,550	7	31,550	4	321,200	8
Total	1,088,200		680,200		1,366,400		795,200		3,930,000	

[1/] Items do not add to total because some owners may have harvested more than one product.
* Fewer than 25 owners
** Less than 0.5 percent

Table 35.--Estimated number of private owners interested in an improvement cut and acres of commercial forest land owned by these owners by distance from residence to nearest tract, size class of ownership, and forest survey unit, Michigan, 1981

Distance to nearest tract (miles)	Size class of ownership (acres)								All interested owners	
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
					EASTERN UP					
0 - 24	4,400	61	1,050	56	1,100	54	250	78	6,800	59
25 - 49	600	8	--	--	100	4	--	--	700	6
50+	2,250	31	750	40	800	40	50	22	3,850	34
No answer	--	--	100	4	50	2	*	**	150	1
Total	7,250	100	1,900	100	2,050	100	300	100	11,500	100
					WESTERN UP					
0 - 24	4,800	44	1,700	49	1,350	66	50	25	7,900	48
25 - 49	2,550	23	150	5	100	6	50	25	2,850	17
50+	2,850	26	1,100	33	500	25	100	50	4,550	27
No answer	800	7	450	13	50	3	*	**	1,300	8
Total	11,000	100	3,400	100	2,000	100	200	100	16,600	100
					NORTHERN LP					
0 - 24	18,900	45	2,900	49	2,350	51	250	50	24,400	46
25 - 49	--	--	350	6	--	--	--	--	350	1
50+	20,900	50	2,500	42	2,200	48	250	50	28,850	49
No answer	2,000	5	100	3	50	1	*	**	2,150	4
Total	41,800	100	5,850	100	4,600	100	500	100	52,750	100
					SOUTHERN LP					
0 - 24	52,650	80	2,500	72	950	68	50	100	56,150	80
25 - 49	150	**	250	7	250	18	--	--	650	1
50+	8,950	14	600	18	200	14	*	**	9,750	14
No answer	3,750	6	100	3	--	--	--	--	3,850	5
Total	65,500	100	3,450	100	1,400	100	50	100	70,400	100
					ALL UNITS					
0 - 24	80,750	64	8,150	56	5,750	56	600	65	92,250	63
25 - 49	3,300	3	750	5	450	4	50	**	4,550	3
50+	34,950	28	4,950	34	3,700	38	400	35	44,000	29
No answer	6,550	5	750	5	150	2	*	**	7,450	5
Total	125,500	100	14,600	100	10,050	100	1,050	100	151,250	100

* Fewer than 25 owners
** Less than 0.5 percent

(Table 35 continued on next page)

Table 35.-continued

Distance to nearest tract (miles)	Size class of ownership (acres)								All interested owners	
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ACRES					
					EASTERN UP					
0 - 24	70,950	44	66,750	53	191,950	51	54,250	41	383,900	48
25 - 49	12,500	8	--	--	20,850	6	—	--	33,350	4
50+	79,300	48	50,100	40	154,400	41	75,100	56	358,900	45
No Answer	--	--	8,350	7	8,350	2	4,200	3	20,900	3
Total	162,750	100	125,200	100	375,550	100	133,550	100	797,050	100
					WESTERN UP					
0 - 24	96,450	48	113,950	48	232,350	62	96,450	48	539,200	53
25 - 49	17,550	9	13,150	6	30,700	8	21,900	11	83,300	8
50+	74,500	37	83,300	35	105,200	28	74,550	37	337,550	33
No Answer	13,150	6	26,300	11	8,750	2	8,750	4	56,950	6
Total	201,650	100	236,700	100	377,000	100	201,650	100	1,017,000	100
					NORTHERN LP					
0 - 24	402,150	55	195,350	47	356,200	47	252,750	50	1,206,450	50
25 - 49	--	--	23,000	6	--	--	--	--	23,000	1
50+	275,750	37	183,850	44	390,650	51	241,300	48	1,091,550	45
No Answer	57,450	8	11,500	3	11,500	2	11,500	2	91,950	4
Total	735,350	100	413,700	100	758,350	100	505,550	100	2,412,950	100
					SOUTHERN LP					
0 - 24	688,350	84	160,100	71	176,100	76	64,050	89	1,088,600	81
25 - 49	8,000	1	16,000	7	32,000	14	--	--	56,000	4
50+	72,050	9	40,000	18	24,000	10	8,000	11	144,050	11
No Answer	48,000	6	8,000	4	--	--	--	--	56,000	4
Total	816,400	100	224,100	100	232,100	100	72,050	100	1,344,650	100
					ALL UNITS					
0 - 24	1,257,900	66	536,150	54	956,600	54	467,500	51	3,218,150	58
25 - 49	38,050	2	52,150	5	83,550	5	21,900	2	195,650	3
50+	501,600	26	357,250	36	674,250	39	398,950	44	1,932,050	35
No Answer	118,600	6	54,100	5	28,600	2	24,450	3	225,750	4
Total	1,916,150	100	999,650	100	1,743,000	100	912,800	100	5,571,650	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 36.--Estimated number of private owners who never plan to harvest timber and acres of commercial forest land owned by distance to residence and interest in an improvement cut, Michigan, 1981

Distance to residence (miles)	Interested in improvement cut						All owners who never plan to harvest	
	Yes		No		No answer			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				OWNERS				
0 - 24	25,900	55	57,750	80	17,400	51	101,050	66
25 - 49	600	1	1,150	2	--	--	1,750	1
50+	19,550	42	10,550	15	6,950	20	37,050	24
No answer	1,100	2	2,500	3	9,750	29	13,350	9
Total	47,150	100	71,950	100	34,100	100	153,200	100
				ACRES OWNED				
0 - 24	370,700	45	468,100	60	108,300	47	947,100	51
25 - 49	28,950	3	40,300	5	--	--	69,250	4
50+	401,300	50	234,900	30	57,450	24	693,650	38
No answer	16,550	2	39,550	5	66,800	29	122,900	7
Total	817,500	100	782,850	100	232,550	100	1,832,900	100

Table 37A.--Estimated number of individual owners who are interested in an improvement cut by owner characteristics and forest survey unit, Michigan, 1981

Owner characteristics	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
AGE (years)										
>24	--	--	**	**	450	1	100	**	550	**
25-44	3,600	33	2,850	18	18,400	36	19,100	28	43,950	30
45-64	4,400	41	8,050	49	20,350	40	34,700	51	67,500	46
65+	2,600	24	5,150	31	9,500	18	14,300	21	31,550	22
No answer	200	2	300	2	2,350	5	100	**	2,950	2
Total	10,800	100	16,350	100	51,050	100	68,300	100	146,500	100
EDUCATION										
1-8 years	2,000	18	1,300	8	5,650	11	11,700	17	20,650	14
9-12 years	2,500	23	5,050	31	10,850	21	21,300	31	39,700	27
1-4 years of college	4,550	42	6,900	42	25,000	49	19,150	28	55,600	38
More than 4 years of college	1,600	15	2,750	17	7,400	15	14,400	21	26,150	18
No answer	150	2	350	2	2,150	4	1,750	3	4,400	3
Total	10,800	100	16,350	100	51,050	100	68,300	100	146,500	100
OCCUPATION										
Professional	1,000	9	3,250	20	10,650	21	9,750	14	24,650	17
Executive	1,350	12	1,000	6	4,250	8	9,300	14	15,900	11
Retired	3,050	28	5,700	35	10,150	20	13,000	19	31,900	22
White collar	850	8	2,150	13	3,750	7	2,550	4	9,300	6
Skilled labor	2,200	20	1,550	10	14,300	28	11,550	17	29,600	20
Homemaker	400	4	200	2	1,050	2	9,000	13	10,650	7
Unskilled labor	400	4	1,200	7	2,800	5	4,100	6	8,500	6
Farmer	200	1	450	3	400	1	6,500	9	7,550	5
Other	*	**	100	**	850	2	600	1	1,550	1
No answer	1,350	12	750	4	2,850	6	1,950	3	6,900	5
Total	10,800	100	16,350	100	51,050	100	68,300	100	146,500	100
INCOME (thousand dollars)										
0-9	1,900	17	6,450	39	6,150	12	13,400	20	27,900	19
10-14	1,100	10	2,050	13	4,150	8	9,700	14	17,000	12
15-19	900	9	1,200	7	5,650	11	8,500	12	16,250	11
20-24	2,100	19	1,550	10	10,100	20	7,100	10	20,850	14
25-29	1,050	10	800	5	3,100	6	5,300	8	10,250	7
30+	2,900	27	3,100	19	17,800	35	21,100	31	44,900	31
No answer	850	8	1,200	7	4,100	8	3,200	5	9,350	6
Total	10,800	100	16,350	100	51,050	100	68,300	100	146,500	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 37B.--Estimated number of commercial forest acres owned by individuals interested in an improvement cut by owner characteristics and forest survey unit, Michigan, 1981

Owner characteristics	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
AGE (years)										
>24	--	--	4,350	**	11,500	1	8,000	1	23,850	**
25-44	112,700	16	170,950	18	379,150	19	272,150	23	934,950	20
45-64	371,400	55	504,150	54	1,068,600	54	576,250	49	2,520,400	53
65+	183,600	27	210,450	23	459,600	23	312,150	26	1,165,800	24
No answer	12,500	2	39,450	4	68,950	3	8,000	1	128,900	3
Total	680,200	100	929,350	100	1,987,800	100	1,176,550	100	4,773,900	100
EDUCATION										
1-8 years	91,800	14	100,850	11	264,250	13	72,050	6	528,950	11
9-12 years	191,950	28	258,650	28	482,600	24	384,150	33	1,317,350	28
1-4 years of college	279,600	41	368,250	40	815,800	41	480,200	41	1,943,850	41
More than 4 years of college	104,350	15	166,550	18	367,700	19	184,100	16	822,700	17
No answer	12,500	2	35,050	3	57,450	13	56,050	4	161,050	3
Total	680,200	100	929,350	100	1,987,800	100	1,176,550	100	4,773,900	100
OCCUPATION										
Professional	75,150	11	214,800	23	333,200	17	104,050	9	727,200	15
Executive	121,050	18	122,750	13	287,250	15	168,050	14	699,100	15
Retired	191,950	28	206,050	22	517,050	26	280,150	24	1,195,200	25
White collar	62,600	9	61,400	7	229,800	12	48,000	4	401,800	8
Skilled labor	100,150	15	113,950	12	241,300	12	200,100	17	655,500	14
Homemaker	20,850	3	21,900	3	23,000	1	16,000	1	81,750	2
Unskilled labor	33,350	5	57,000	6	103,400	5	56,050	5	249,800	5
Farmer	45,900	7	35,100	4	57,450	3	216,100	19	354,550	7
Other	4,150	**	21,900	2	46,000	2	16,000	1	88,050	2
No answer	25,050	4	74,500	8	149,350	7	72,050	6	320,950	7
Total	680,200	100	929,350	100	1,987,800	100	1,176,550	100	4,773,900	100
INCOME (thousand dollars)										
0-9	96,000	14	144,700	15	252,750	13	120,050	10	613,500	13
10-14	91,800	14	127,150	14	183,850	9	160,050	14	562,850	12
15-19	66,800	10	105,200	11	241,300	12	112,050	10	525,350	11
20-24	75,100	11	109,600	12	195,350	10	144,050	12	524,100	11
25-29	50,050	7	65,750	7	126,400	6	80,050	7	322,250	7
30+	258,700	38	267,400	29	758,350	38	488,250	41	1,772,700	37
No answer	41,750	6	109,550	12	229,800	12	72,050	6	453,150	9
Total	680,200	100	929,350	100	1,987,800	100	1,176,550	100	4,773,900	100

** Less than 0.5 percent

Table 38.--Estimated number of private ownership units and acres of commercial forest land owned by requests for forestry assistance and forest survey unit, Michigan, 1981

Forestry assistance requested	Forest survey unit									
	Eastern UP		Western UP		Northern LP		Southern LP		All Units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Yes	2,650	13	4,750	14	15,900	11	15,750	9	39,050	10
No	16,000	80	24,750	76	119,650	81	151,300	82	311,700	81
No answer	1,400	7	3,250	10	12,400	8	16,900	9	33,950	9
Total	20,050	100	37,750	100	147,950	100	183,950	100	384,700	100
					ACRES OWNED					
Yes	333,850	26	495,350	34	1,126,050	29	520,250	23	2,475,500	28
No	880,500	70	889,900	61	2,527,800	66	1,608,800	72	5,907,000	67
No answer	54,250	4	65,750	5	183,850	5	112,050	5	415,900	5
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100

Table 39.--Estimated number of private ownership units and acres of commercial forest land owned by owners who have requested forestry assistance and size class of ownership, Michigan, 1981

Size class of ownership (acres)	All private owners		Owners that requested assist.		Percent of size class
	Number	Percent	Number	Percent	Percent
			OWNERS		
1-49	346,300	90	29,200	75	8
50-99	22,650	6	4,650	12	20
100-499	14,500	4	4,600	12	32
500+	1,250	**	600	1	48
Total	384,700	100	39,050	100	10
			ACRES		
1-49	3,709,300	42	630,800	25	17
50-99	1,555,200	18	314,350	13	20
100-499	2,458,300	28	897,200	36	36
500+	1,075,600	12	633,150	26	59
Total	8,798,400	100	2,475,500	100	28

** Less than 0.5 percent

Table 40.--Estimated number of private ownership units who requested forestry assistance and acres of commercial forest land owned by size class of ownership and distance from residence to nearest tract, Michigan, 1981

Size class of ownership (acres)	Distance from residence (miles)								All owners who requested assistance	
	0-24		25-49		50+		No Answer			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
1-49	23,250	60	500	1	3,450	9	2,000	5	29,200	75
50-99	3,450	9	450	1	650	1	100	**	4,650	12
100-499	2,850	7	150	**	1,500	4	100	**	4,600	12
500+	300	1	50	**	200	1	50	**	600	1
Total	29,850	77	1,150	3	5,800	15	2,250	5	39,050	100
					ACRES OWNED					
1-49	490,800	20	21,150	1	71,850	3	47,000	2	630,800	25
50-99	226,200	9	31,750	1	52,000	2	4,400	**	314,350	13
100-499	499,900	20	41,000	2	324,750	13	31,550	1	897,200	36
500+	335,950	14	24,650	1	248,150	10	24,400	1	633,150	26
Total	1,552,850	63	118,550	5	696,750	28	107,350	4	2,475,500	100

** Less than 0.5 percent

Table 41.--Estimated number of private ownership units and acres of commercial forest land owned by harvesters and nonharvesters, and request for forestry assistance, Michigan, 1981

Forestry assistance requested	Private owners			Acres owned		
	Number	Percent	Sampling error %	Number	Percent	Sampling error %
MAJOR HARVESTERS						
Yes	20,900	5	13	1,755,850	20	6
No	66,900	17	15	2,046,650	23	5
No answer	2,850	1	33	127,500	2	21
Total	90,650	23	12	3,930,000	45	3
MINOR HARVESTERS						
Yes	9,000	2	29	229,450	3	17
No	68,800	18	16	994,850	11	8
No answer	2,550	1	48	43,900	**	41
Total	80,350	21	14	1,268,200	14	7
NONHARVESTERS						
Yes	9,100	2	19	478,700	5	12
No	175,450	46	13	2,841,850	32	4
No answer	7,000	2	35	105,050	1	25
	191,550	50	12	3,425,600	39	4
NO ANSWER						
Yes	50	**	100	11,500	**	100
No	550	**	62	23,650	**	58
No answer	21,550	6	46	139,450	2	23
Total	22,150	6	44	174,600	2	21
ALL OWNERS						
Yes	39,050	10	10	2,475,500	26	5
No	311,700	81	8	5,907,000	69	2
No answer	33,950	9	29	415,900	5	12
Total	384,700	100	7	8,798,400	100	.68

** Less than 0.5 percent

Table 42.--Estimated number of private owners who requested forestry assistance and acres of commercial forest land owned by size class of ownership and type of assistance received, Michigan, 1981

Nature of assistance	Ownership size class (acres)								All owners who requested assist.	
	1-49 acres		50-99 acres		100-499 acres		500+ acres			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
Gen. mgt.[1/]	8,900	30	1,500	32	1,600	35	250	43	12,250	31
Timber sales[2/]	7,300	25	1,300	28	1,350	29	200	33	10,150	26
TSI[3/]	3,150	11	700	15	700	15	50	8	4,600	11
Planting	6,150	21	200	4	400	9	50	8	6,800	18
No answer	3,700	13	950	20	550	12	50	8	5,250	14
Total	29,200	100	4,650	100	4,600	100	600	100	39,050	100
					ACRES OWNED					
Gen. mgt.[1/]	204,500	32	102,200	34	326,800	37	295,050	48	928,550	38
Timber sales[2/]	168,550	27	85,500	26	252,350	28	208,400	32	714,800	29
TSI[3/]	100,800	15	44,800	14	128,200	14	41,800	7	315,600	12
Planting	76,950	13	11,500	4	73,800	8	15,850	2	178,100	7
No answer	80,000	13	70,350	22	116,050	13	72,050	11	338,450	14
Total	630,800	100	314,350	100	897,200	100	633,150	100	2,475,500	100

[1/] Includes management planning, surveying, and insect and disease control.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes thinning, improvement cuts, pruning, herbicide applications, and other timber stand improvements.

Table 43.--Estimated number of private owners who requested forestry assistance and acres of commercial forest land owned by distance from residence to nearest forest tract and type of assistance, Michigan, 1981

Type of assistance	Miles from nearest tract								All owners who requested assist.	
	<25		25-49		50+		No answer			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
Gen. mgt.[1/]	9,800	33	550	48	1,250	22	650	29	12,250	31
Timber sales[2/]	8,350	28	400	35	1,000	17	400	18	10,150	26
TSI[3/]	4,050	13	150	13	400	7	--	--	4,600	12
Planting	4,350	15	50	4	2,400	41	--	--	6,800	18
No Answer	3,300	11	--	--	750	13	1,200	53	5,250	13
Total	29,850	100	1,150	100	5,800	100	2,250	100	39,050	100
					ACRES OWNED					
Gen. mgt.[1/]	539,450	35	51,800	44	296,850	43	40,450	38	928,550	37
Timber sales[2/]	462,550	30	46,500	39	177,700	25	28,050	26	714,800	29
TSI[3/]	269,700	17	8,750	7	37,150	5	--	--	315,600	13
Planting	105,000	7	11,500	10	61,600	9	--	--	178,100	7
No answer	176,150	11	--	--	123,450	18	38,850	36	338,450	14
Total	1,552,850	100	118,550	100	696,750	100	107,350	100	2,475,500	100

[1/] Includes management planning, surveying, and insect and disease control.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes thinning, improvement cuts, pruning, herbicide applications, and other timber stand improvements.

Table 44.--Estimated distribution of all assisted individual owners and acres of commercial forest land owned by owner age class and nature of assistance, Michigan, 1981[4/]

Nature of assistance	Owner age group (years) 25-44 Percent	45-64 Percent	65+ Percent	No answer Percent	All owners Percent
		ASSISTED OWNERS			
Gen. mgt.[1/]	10(42)	13(34)	7(22)	**(5)	30
Timber sales[2/]	7(28)	7(19)	11(33)	**(4)	25
TSI[3/]	4(14)	4(13)	3(10)	**(**)	12
Planting	-- --	7(19)	10(29)	2(37)	18
No answer	4(16)	5(15)	2(7)	2(54)	14
Total	25(100)	37(100)	34(100)	4(100)	100
		ACRES OWNED			
Gen. mgt.[1/]	7(41)	17(36)	10(30)	1(15)	35
Timber sales[2/]	5(29)	11(25)	10(31)	1(24)	27
TSI[3/]	4(20)	7(15)	4(11)	**(5)	15
Planting	-- --	3(7)	4(12)	1(30)	8
No answer	2(10)	7(17)	5(16)	1(26)	15
Total	18(100)	46(100)	32(100)	4(100)	100

1/ Includes management planning, surveying, and insect and disease control.

2/ Includes timber marking, sales assistance, and determination of merchantability.

3/ Includes thinning, improvement cuts, pruning, herbicide applications, and other timber stand improvements.

4/ Distribution over the entire population of assisted owners is listed first, followed (in parentheses) by percent within the age class.

** Less than 0.5 percent

Table 45.--Estimated distribution of all assisted individual owners and acres of commercial forest land owned by occupation group and nature of assistance, Michigan, 1981

Nature of assistance	Occupation group									
	Prof. Percent	Exec. Percent	Retired Percent	White collar Percent	Skilled trade Percent	Home maker Percent	Unskilled laborer Percent	Farmer Percent	Other Percent	No answer Percent
					ASSISTED OWNERS					
Gen. mgt.[1/]	9(50)[4/]	5(74)	5(16)	3(64)	4(23)	-- --	**(14)	4(38)	-- --	**(11)
Timber sales[2/]	1(8)	**(5)	10(32)	1(12)	8(48)	1(28)	**(8)	3(26)	1(21)	1(15)
TSI[3/]	3(19)	**(7)	5(14)	1(19)	**(2)	**(1)	1(36)	1(7)	**(2)	**(5)
Planting	3(19)	**(3)	10(31)	-- --	1(6)	-- --	-- --	-- --	2(64)	2(58)
No Answer	1(4)	1(11)	2(7)	**(4)	3(20)	2(71)	1(42)	3(28)	**(13)	**(10)
Total	17(100)	7(100)	33(100)	5(100)	16(100)	3(100)	2(100)	11(100)	2(100)	4(100)
Population[5/]	13	13	20	7	15	6	6	5	2	13
					ACRES OWNED					
Gen. mgt.[1/]	7(44)	7(50)	9(31)	2(35)	2(25)	-- --	**(11)	4(37)	-- --	1(27)
Timber sales[2/]	3(17)	3(20)	8(28)	2(36)	5(47)	1(43)	**(15)	3(29)	1(36)	1(27)
TSI[3/]	4(21)	1(9)	5(17)	1(9)	1(6)	**(13)	1(43)	2(18)	**(7)	**(7)
Planting	1(8)	1(9)	3(10)	-- --	1(9)	-- --	-- --	-- --	1(25)	1(19)
No answer	2(10)	2(12)	4(14)	1(20)	2(14)	**(43)	1(31)	2(16)	1(32)	1(20)
Total	17(100)	15(100)	29(100)	7(100)	11(100)	1(100)	2(100)	10(100)	2(100)	5(100)
Population[5/]	12	12	27	7	14	2	6	8	2	10

[1/] Includes management planning, surveying, and insect and disease control.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes thinning, improvement cuts, pruning, herbicide applications, and other timber stand improvements.

[4/] Overall distribution is listed first, followed (in parentheses) by percent within the age class.

[5/] Distribution within overall population.

** Less than 0.5 percent

Table 46.--Estimated distribution of all assisted individual owners and acres of commercial forest land owned by education group and nature of assistance, Michigan, 1981

Nature of assistance	Education group					
	Grade 1-8 Percent	Grade 9-12 Percent	H.S.+ Percent	B.S. Percent	Post graduate Percent	No answer Percent
			ASSISTED OWNERS			
Gen. mgt.[1/]	2(30)[4/]	9(29)	7(40)	3(29)	10(30)	**(3)
Timber sales[2/]	2(39)	10(33)	5(28)	3(30)	5(14)	**(4)
TSI[3/]	1(10)	2(8)	3(17)	2(23)	4(11)	**(1)
Planting	-- --	1(4)	**(2)	2(16)	12(39)	3(84)
No answer	1(21)	9(26)	2(12)	1(2)	2(6)	**(8)
Total	6(100)	31(100)	18(100)	10(100)	32(100)	3(100)
Population[5/]	12	27	26	11	13	11
			ACRES OWNED			
Gen. mgt.[1/]	1(18)	7(30)	9(35)	5(38)	11(41)	1(24)
Timber sales[2/]	2(33)	7(27)	8(32)	5(33)	6(21)	1(41)
TSI[3/]	1(7)	3(13)	4(17)	3(18)	4(16)	**(4)
Planting	-- --	2(8)	1(4)	1(8)	2(10)	2(41)
No answer	3(41)	5(21)	3(12)	1(3)	3(12)	**(11)
Total	7(100)	24(100)	25(100)	14(100)	26(100)	4(100)
Population[5/]	14	29	27	10	13	7

[1/] Includes management planning, surveying, and insect and disease control.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes thinning, improvement cuts, pruning, herbicide applications, and other timber stand improvements.

[4/] Overall distribution is listed first, followed (in parentheses) by percent within the age class.

[5/] Distribution within the overall population.

** Less than 0.5 percent

Table 47.--Estimated distribution of assisted individual owners and acres of commercial forest land by income group and nature of assistance, Michigan, 1981

Nature of assistance	Income group (thousand dollars)						
	> 10 Percent	10-15 Percent	15-20 Percent	20-25 Percent	25-30 Percent	30 + Percent	No answer Percent
				ASSISTED OWNERS			
Gen. mgt.[1/]	5(39)[4/]	2(13)	2(11)	3(28)	3(60)	15(49)	1(8)
Timber sales[2/]	2(16)	6(51)	6(26)	5(44)	1(12)	4(14)	2(23)
TSI[3/]	1(9)	2(13)	3(13)	1(4)	1(28)	2(8)	2(26)
Planting	1(6)	1(13)	10(47)	-- --	-- --	4(12)	2(34)
No answer	4(30)	1(10)	**(3)	3(23)	**(**)	5(17)	**(9)
Total	13(100)	12(100)	21(100)	12(100)	5(100)	30(100)	7(100)
Population[5/]	20	11	12	12	9	18	18
				ACRES OWNED			
Gen. mgt.[1/]	3(31)	1(13)	2(15)	3(35)	2(41)	20(46)	3(26)
Timber sales[2/]	2(16)	4(45)	5(42)	4(47)	2(38)	9(19)	2(23)
TSI[3/]	1(13)	2(18)	3(21)	1(7)	1(18)	5(12)	2(20)
Planting	1(12)	1(6)	2(16)	-- --	-- --	3(7)	1(16)
No answer	3(28)	1(17)	**(6)	**(10)	**(3)	8(16)	2(15)
Total	10(100)	9(100)	12(100)	8(100)	5(100)	45(100)	10(100)
Population[5/]	17	11	11	10	7	29	15

[1/] Includes management planning, surveying, and insect and disease control.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes thinning, improvement cuts, pruning, herbicide applications, and other stand improvements.

[4/] Overall distribution is listed first, followed (in parentheses) by percent within the age class.

[5/] Distribution within the overall population.

** Less than 0.5 percent

Table 48.--Estimated number of private ownership units and acres of commercial forest land owned by size class of ownership and agency that owners would contact for forestry assistance, Michigan, 1981

Agency	Ownership size class (acres)								All owners	
	1-49		50-99		100-499		500+			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
County forester	6,100	2	150	1	50	**	50	4	6,350	2
State forester	34,400	10	4,350	19	3,200	22	250	19	42,200	11
SCS	3,550	1	950	4	550	4	50	4	5,100	1
USFS	6,900	2	250	4	600	4	250	23	8,000	2
ASCS	4,900	1	750	3	650	4	*	**	6,300	2
Consultant/ industry for.	3,550	1	900	4	500	4	150	12	5,100	1
Extension service	3,200	1	450	2	300	2	*	**	3,950	1
Other	8,050	2	50	**	450	3	50	4	8,600	2
Don't know	171,650	50	10,400	46	6,300	44	300	23	188,650	49
No answer	104,000	30	4,400	20	1,900	13	150	11	110,450	29
Total	346,300	100	22,650	100	14,500	100	1,250	100	384,700	100
					ACRES OWNED					
County forester	39,900	1	12,400	1	15,850	1	23,000	2	91,150	1
State forester	574,750	16	301,450	19	581,100	24	261,100	25	1,718,400	20
SCS	90,500	2	67,800	4	102,050	4	36,150	3	296,500	3
USFS	104,200	3	17,150	1	101,800	4	91,450	8	314,600	3
ASCS	87,500	2	48,100	3	88,750	4	17,100	2	241,450	3
Consultant/ industry for.	36,400	1	56,650	4	111,400	4	178,750	17	383,200	4
Extension service	95,800	3	23,000	2	50,450	2	4,150	**	173,400	2
Other	142,100	4	4,400	**	93,950	4	19,800	2	260,250	3
Don't know	1,839,200	49	726,500	47	1,009,500	41	268,500	25	3,843,700	44
No answer	698,950	19	297,750	19	303,450	12	175,600	16	1,475,750	17
Total	3,709,300	100	1,555,200	100	2,458,300	100	1,075,600	100	8,798,400	100

* Fewer than 25 owners
** Less than 0.5 percent

Table 49.--Estimated number of private ownership units and acres of commercial forest land owned by decision to seek assistance and agency that owners would contact for forestry assistance, Michigan, 1981

Agency	Forestry assistance sought: Yes Number	Yes Percent	No Number	No Percent	No answer Number	No answer Percent	All owners Number	All owners Percent
			OWNERS					
County forester	1,500	4	4,850	2	--	--	6,350	2
State forester	15,700	41	26,100	8	400	2	42,200	11
SCS	2,650	7	2,350	1	100	**	5,100	1
USFS	2,150	6	5,850	2	--	--	8,000	2
ASCS	3,700	9	2,600	1	--	--	6,300	2
Consultant/ industry for.	4,450	11	650	**	--	--	5,100	1
Extension service	1,300	3	2,650	1	--	--	3,950	1
Other	750	2	7,850	2	--	--	8,600	1
Don't know	4,850	12	183,250	59	550	2	188,650	49
No answer	2,000	5	75,550	24	32,900	96	110,450	29
Total	39,050	100	311,700	100	33,950	100	384,700	100
			ACRES OWNED					
County forester	59,250	2	31,900	1	--	--	91,150	1
State forester	955,400	39	755,000	13	8,000	2	1,718,400	20
SCS	208,050	8	80,450	1	8,000	2	296,500	3
USFS	179,400	7	135,200	2	--	--	314,600	3
ASCS	166,750	7	74,700	1	--	--	241,450	3
Consultant/ industry for.	333,300	14	49,900	1	--	--	383,200	4
Extension service	67,400	3	106,000	2	--	--	173,400	2
Other	52,950	2	207,300	3	--	--	260,250	3
Don't know	283,150	11	3,544,200	60	16,350	4	3,843,700	44
No answer	169,850	7	922,350	16	383,550	92	1,475,750	17
Total	2,475,500	100	5,907,000	100	415,900	100	8,798,400	100

** Less than 0.5 percent

Table 50.--Estimated number of private ownership units and acres of commercial forest land owned by availability for recreation, Michigan, 1981

Recreation availability	Owners Number	Owners Percent	Owners Sampling error %	Acres owned Number	Acres owned Percent	Acres owned Sampling error %
Owner permits recreation and does not recreate	9,500	3	28	331,300	4	14
Owner recreates and permits recreation	55,250	14	16	2,016,550	23	5
Owner recreates and excludes public	230,050	60	9	5,372,700	61	2
Subtotal recreation	294,800	77	8	7,720,550	88	1
Not used and not permitted	39,850	10	35	476,550	5	13
No answer	50,050	13	25	601,300	7	11
Total	384,700	100	7	8,798,400	100	.68

Table 51.--Estimated number of private ownership units and acres of commercial forest land owned by type of recreational use by the owner, the owner's family, or immediate circle of friends, Michigan, 1981

Recreation by owners, family, and friends	Private owners			Acres owned		
	Number	Percent	Sampling error %	Number	Percent	Sampling error %
Hiking or skiing	104,950	27	10	3,226,550	36	4
Picnicking	43,700	11	15	1,575,750	18	6
Camping	60,700	16	13	2,017,550	23	5
Fishing	43,600	11	16	1,876,800	21	5
Hunting or trapping	169,200	44	9	5,500,200	63	2
Snowmobiling or trail biking	84,850	22	14	2,468,950	28	5
Berry picking	88,450	23	13	2,508,250	28	4
Other	50,900	13	25	997,300	11	8
Some recreational use by self [1/]	285,300	74	8	7,389,250	84	1
No uses indicated	99,400	26	19	1,409,150	16	7
Total	384,700	100	7	8,798,400	100	.68

[1/] Columns do not add to total because some owners report more than one type of use.

Table 52.--Estimated number of private ownership units and acres of commercial forest land owned by type of public use permitted, Michigan, 1981

Type of public use permitted	Owners			Acres owned		
	Number	Percent	Sampling error %	Number	Percent	Sampling error %
Hiking or skiing	31,200	8	26	1,052,950	12	7
Picnicking	5,900	2	25	348,450	4	13
Camping	4,150	1	23	335,400	4	14
Fishing	10,050	2	18	634,500	7	9
Hunting or trapping	44,150	11	19	1,677,900	19	5
Snowmobiling or trail biking	29,100	8	28	1,039,700	11	7
Berry picking	14,650	4	18	745,100	8	9
Other	2,700	1	34	191,706	2	19
Some type of public use permitted [1/]	64,750	17	14	2,347,850	26	4
Public use not permitted	179,600	47	11	4,133,050	47	3
No uses indicated	140,350	36	14	2,317,500	27	5
Total	384,700	100	7	8,798,400	100	.68

[1/] Columns do not add to total because some owners report more than one type of use.

Table 53.--Estimated number of private ownership units and acres of commercial forest land owned by availability for recreational use and forest survey unit, Michigan, 1981

Recreational use	Eastern UP		Western UP		Northern LP		Southern LP		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Public use:										
Hiking	1,850	9	4,300	13	9,600	6	15,450	8	31,200	8
Hunting	4,400	22	5,800	18	13,000	9	20,950	11	44,150	11
Snowmobiling	2,300	11	3,850	12	8,000	5	14,950	8	29,100	8
Some types of public use permitted [1]	5,650	28	8,550	26	19,650	13	30,900	17	64,750	17
Public use not permitted	9,200	46	10,800	33	82,650	56	76,950	42	179,600	47
No uses indicated	5,200	26	13,400	41	45,650	31	76,100	41	140,350	36
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100
Owner recreation:										
Hiking	7,000	35	10,850	33	38,200	26	48,900	27	104,950	27
Hunting	13,150	66	14,850	45	63,250	43	77,950	42	169,200	44
Snowmobiling	7,000	35	7,400	23	32,000	22	38,450	21	84,850	22
Some recreational use by self indicated [1]	17,850	89	28,350	87	106,100	72	133,000	72	285,300	74
No uses indicated	2,200	11	4,400	13	41,850	28	50,950	28	99,400	26
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100
					ACRES OWNED					
Public use:										
Hiking	133,550	10	333,150	23	402,150	10	184,100	8	1,052,950	12
Hunting	267,050	21	486,600	34	540,050	14	384,200	17	1,677,900	19
Snowmobiling	162,750	13	333,200	23	367,650	10	176,100	8	1,039,700	12
Some types of public use permitted [1]	367,250	29	640,050	44	804,300	21	536,250	24	2,347,850	27
Public use not permitted	525,800	41	526,000	36	2,056,750	54	1,024,500	46	4,133,050	47
No uses indicated	375,550	30	284,950	20	976,650	25	680,350	30	2,317,500	26
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100
Owner recreation:										
Hiking	450,700	36	613,700	42	1401,800	36	760,350	34	3,266,550	37
Hunting	897,200	71	933,700	64	2,596,750	68	1,072,550	48	5,500,200	62
Snowmobiling	417,300	33	394,500	27	1,240,950	32	416,200	19	2,468,950	28
Some types of public use permitted [1]	1,147,550	90	1,240,600	85	3,240,200	84	1,760,900	79	7,389,250	84
No uses indicated	121,050	10	210,400	15	597,500	16	480,200	21	1,409,150	16
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100

[1] Columns do not add to total because some owners report more than one type of use.

Table 54.--Estimated number of private ownership units and acres of commercial forest land owned by availability for recreational use and size class, Michigan, 1981

Public use permitted	Size class of ownership: 1-49 Number	1-49 Percent	50-99 Number	50-99 Percent	100-499 Number	100-499 Percent	500+ Number	500+ Percent	All owners Number	All owners Percent
					OWNERS					
Yes	52,800	15	7,350	32	4,050	28	550	44	64,750	17
No	162,700	47	9,850	44	6,550	45	500	40	179,600	47
No answer	130,800	38	5,450	24	3,900	27	200	16	140,350	36
Total	346,300	100	22,650	100	14,500	100	1250	100	384,700	100
					ACRES OWNED					
Yes	782,800	21	501,650	32	695,850	28	367,550	34	2,347,850	27
No	1,856,000	50	670,450	43	1,133,100	46	473,500	44	4,133,050	47
No answer	1,070,500	29	383,100	25	629,350	26	234,550	22	2,317,500	26
Total	3,709,300	100	1,555,200	100	2,458,300	100	1,075,600	100	8,798,400	100

Table 55.--Estimated number of private ownership units and acres of commercial forest land owned by whether land is posted and forest survey unit, Michigan, 1981

Land posted	Eastern UP Number	Eastern UP Percent	Western UP Number	Western UP Percent	Northern LP Number	Northern LP Percent	Southern LP Number	Southern LP Percent	All units Number	All units Percent
					OWNERS					
Yes	5,800	29	6,800	21	51,450	35	48,350	26	112,400	29
No	13,250	66	23,050	70	82,900	56	104,300	57	223,500	58
No answer	1,000	5	2,900	9	13,600	9	31,300	17	48,800	13
Total	20,050	100	32,750	100	147,950	100	183,950	100	384,700	100
					ACRES OWNED					
Yes	467,400	37	455,900	31	2,298,000	60	984,500	44	4,205,800	48
No	746,950	59	933,700	65	1,298,400	34	1,104,550	49	4,083,600	46
No answer	54,250	4	61,400	4	241,300	6	152,050	7	509,000	6
Total	1,268,600	100	1,451,000	100	3,837,700	100	2,241,100	100	8,798,400	100

Table 56.--Estimated number of private ownership units and acres of commercial forest land owned by reason for posting and use permitted, Michigan, 1981

Reason for posting	Public use permitted: Yes		No		No answer		All owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				OWNERS				
Abuse of property	2,850	4	10,100	6	3,800	3	16,750	4
Safety	2,050	3	7,400	4	6,650	5	16,100	4
Liability	1,600	3	750	**	--	--	2,350	1
Control access	4,800	7	30,650	17	7,100	5	42,550	11
Control hunting	2,450	4	10,850	6	11,200	8	24,500	6
Not specified	1,300	2	6,100	4	2,750	2	10,150	3
All reasons	15,050	23	65,850	37	31,500	23	112,400	29
Land not posted	46,900	73	97,750	54	78,850	56	223,500	58
No answer	2,800	4	16,000	9	30,000	21	48,800	13
Total	64,750	100	179,600	100	140,350	100	384,700	100
				ACRES OWNED				
Abuse of property	158,850	7	384,800	9	143,950	6	687,600	8
Safety	52,600	2	137,450	5	105,700	5	345,750	4
Liability	28,200	1	62,500	2	--	--	90,700	1
Control access	310,900	13	1,118,150	27	260,150	11	1,689,200	19
Control hunting	146,450	7	520,400	12	267,600	12	934,450	11
Not specified	68,550	3	293,350	7	96,200	4	458,100	5
All reasons	765,550	33	2,566,650	62	873,600	38	4,205,800	48
Land not posted	1,530,550	65	1,387,850	34	1,165,200	50	4,083,600	46
No answer	51,700	2	178,600	4	278,700	12	509,000	6
Total	2,347,800	100	4,133,100	100	2,317,500	100	8,798,400	100

** Less than 0.5 percent

Table 57.--Estimated number of private ownership units and acres of commercial forest land owned by availability for hunting, Michigan, 1981

Hunting availability	Owners		Acres	
	Number	Percent	Number	Percent
Owner permits hunting and does not hunt	10,100	3	466,100	5
Owner hunts and permits hunting	34,050	9	1,211,800	14
Owner hunts and excludes public hunting	135,150	35	4,288,400	49
Subtotal hunting	179,300	47	5,966,300	68
No hunting	155,350	40	2,230,750	25
No answer	50,050	13	601,350	7
Total	384,700	100	8,798,400	100

☆ U.S. GOVERNMENT PRINTING OFFICE : 1986—653-851/20145

Carpenter, Eugene M.; Hansen, Mark H.
The private forest landowners of Michigan. Resour. Bull. NC-93. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1985, 55 p.

Estimates the number and distribution of nonindustrial private forest landowners in Michigan by size class and owner attitudes and objectives concerning forest ownership, management, and use. Provides 57 tables relating owner and property characteristics for the State and its four Forest Survey Units.

KEY WORDS: Nonindustrial, owner objectives, owner attitudes, NIPFL, farm forest, other private, harvesting, forestry assistance.

United States
Department of
Agriculture

Forest
Service

North Central
Forest Experiment
Station

Resource
Bulletin **NC-94**

Wisconsin Forest Statistics, 1983

Gerhard K. Raile

Information contained in this report includes the most commonly used Forest Inventory and Analysis statistics. However, additional forest resource data can be provided to interested users. Persons requesting additional information that can be provided from the raw inventory data are expected to pay for the retrieval costs. These costs will vary depending on the complexity of the request, from less than $100 for a relatively simple request to $2,000 for a complex retrieval involving the services of a Forest Inventory and Analysis computer programmer. If requests for data conflict with ongoing Forest Inventory and Analysis work, they will be scheduled so as to minimize the impact on the work unit.

Requests for unpublished information may be directed to:

Burton L. Essex
Forest Inventory and Analysis Project
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108
Phone: (612) 642-5275

Area served: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin.

North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
Manuscript approved for publication October 24, 1985
1985

FOREWORD

Forest Inventory and Analysis (FIA) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974 and the earlier McSweeney-McNary Forest Research Act of 1928. Its objective is to periodically determine the extent, condition, and volume of timber, growth, and depletions of the Nation's forest land. This kind of up-to-date information is essential to frame realistic forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual states. The North Central Forest Experiment Station covers Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Fieldwork for the 1983 Wisconsin forest inventory was begun in the summer of 1981 and was completed in late 1983. Reports on the three previous surveys of Wisconsin's timber resource are dated 1936, 1956, and 1968.

Similar Resource Bulletins reporting statistical highlights and detailed tables of the Survey Units in Wisconsin (fig 1.) are available. In addition to these statistical reports, a series of analytical reports will also be published that will analyze the State's timber resource.

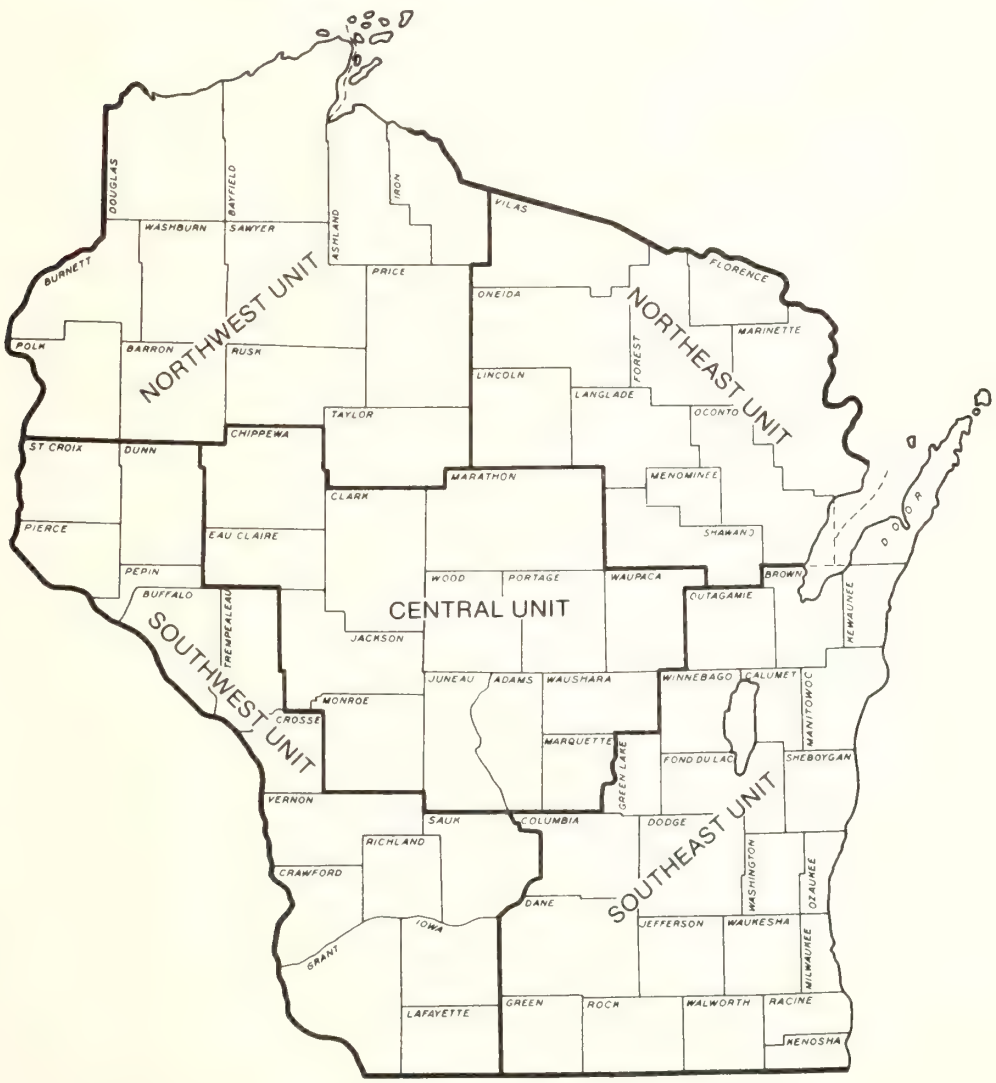

Figure 1.—*Wisconsin Survey Units.*

More accurate survey information was obtained during the 1983 survey than otherwise would have been feasible because of intensified field sampling. Such sampling was made possible by additional funding and manpower provided by the Wisconsin State Legislature through the Department of Natural Resources. Data from the Department's canvass of all primary wood-using plants in the State were used to help estimate the quantity of timber products harvested in Wisconsin.

Aerial photos used in the Forest Inventory were furnished by the Wisconsin Department of Natural Resources, the USDA Agricultural Stabilization and Conservation Service, and the National Forests.

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Wisconsin Forest Statistics, 1983

Gerhard K. Raile, *Mensurationist*

HIGHLIGHTS

Forest Area

- Forest land accounted for 15.4 million acres (44 percent of the State's land area) in 1983, compared with 14.9 million acres (43 percent) in 1968.
- Commercial forest land occupied 14.8 million acres (96 percent of the forest land) in 1983, compared with 14.5 million acres (97 percent) in 1968.
- Productive-reserved forest land totaled 260,900 acres in 1983, compared with 34,200 acres in 1968. Additions since 1968 include Apostle Islands National Lakeshore, Wild and Scenic Riverways, National Forest Wilderness Areas, state game management areas and state parks.
- Farmers and miscellaneous private individuals owned 9.1 million acres, 62 percent of the commercial forest in 1983.
- The maple-birch (4.0 million acres), aspen (3.3 million acres), and oak-hickory (2.9 million acres) forest types accounted for 69 percent of the commercial forest area.
- Poletimber stands accounted for 42 percent of the commercial forest area, followed by sawtimber stands (32 percent), sapling and seedling stands (25 percent), and nonstocked areas (1 percent).

Timber Volume

- The volume of growing stock in 1983 was 15.5 billion cubic feet, 39 percent greater than the 11.2 billion in 1968.
- Hardwoods made up 77 percent of the growing-stock volume (11.9 billion cubic feet).
- Average growing-stock volume per acre in 1983 was 1,050 cubic feet compared with 768 cubic feet in 1968.
- Fifty-eight percent of the growing-stock volume was in trees less than 11 inches in diameter at breast height (d.b.h.).
- Sawtimber amounted to 35 billion board feet[1] in 1983.
- Thirty-seven percent of the growing-stock volume was in stands 41 to 60 years old.

Net Growth

- Net annual growth rate of growing stock was 3.2 percent of inventory. Softwoods grew faster (3.9 percent) than hardwoods (2.9 percent).
- Net annual growth per acre increased from 28.9 cubic feet in 1967 to 33.3 cubic feet in 1982.
- Mortality of growing-stock trees averaged 0.9 percent of inventory in 1982 (136.8 million cubic feet).
- Disease accounted for 23 percent of growing-stock mortality.

Timber Use

- Timber removals from growing stock totaled 285.0 million cubic feet in 1982: 247.2 million for timber products, 21.4 million for other removals, and 16.4 million for logging residue.
- The aspens made up 34 percent of the 1982 growing-stock removals.
- Output of timber products from roundwood totaled 395.3 million cubic feet in 1981, 42 percent of which was pulpwood.
- Wood residue from primary plants totaled 43.6 million cubic feet in 1981, of which 0.8 million were not used.

Biomass

- Live shrub biomass yield (including trees less than 1 inch d.b.h.) was highest in the tamarack forest type—8,085 pounds per acre.
- Live tree biomass (trees greater than 1 inch d.b.h.) totaled 993.3 million green tons, nearly half in the boles of growing-stock trees.

---

[1] *International 1/4-inch rule.*

APPENDIX

ACCURACY OF SURVEY

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit level. Consequently, the reported figures are estimates only. A measure of reliability of these figures is given by sampling errors. These sampling errors mean the chances are two out of three that the true inventory value is within the limits indicated.

For example, the estimated growing-stock volume in Wisconsin in 1983, 15,498.2 million cubic feet, has a sampling error of ±1.05 percent (±162.7 million cubic feet). Therefore, the growing-stock volume from a 100-percent inventory, would have a two in three chance of falling between 15,335.5 and 15,660.9 million cubic feet.

The following tabulation shows the sampling errors for the 1983 Wisconsin Inventory:

Item	State totals	Sampling error
Growing stock	(Million cubic feet)	(Percent)
Volume	15,498.2	1.05
Growth	491.2	1.68
Removals	285.0	10.09
Sawtimber	(Million board feet)	
Volume	35,035.4	1.59
Growth	1,443.0	2.38
Removals	826.3	11.23
Commercial forest	(Thousand acres)	
Area	14,759.4	0.22

As survey data are broken down into sections smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for growing-stock volume in a particular Unit or county is higher than that for total growing-stock volume in the State (table 75 shows the sampling errors for estimates smaller than State totals).

SURVEY PROCEDURES

We used a two-phase sampling design for the 1983 Wisconsin survey. This sampling scheme and associated estimators are similar to sampling with partial replacement (SPR) in that a set of randomly located plots was available for remeasurement and a set of new randomly located plots were established and measured. Major enhancements in the new Wisconsin design were stratification for disturbance on the old sample and use of a growth model to improve regression estimates made on the old undisturbed forest plots. The growth model used was the Stand and Tree Evaluation and Modeling System (STEMS).[2]

The major steps in the new survey design were as follows:

1. The first phase of the survey was to interpret aerial photos. In this phase two sets of random points were located on current aerial photographs. The first was a set of new photo points and the second was a set of relocated old photo points (ground plot locations from the previous inventory). A total of 195,220 1-acre points, including old ground sample locations, were systematically distributed across aerial photos of the entire State, except the National Forests. These points were classified into land classes as shown below to make a preliminary estimate of forest area. Next, 89,420 of these points were stereoclassified as to stand-size class and density. Finally, a total of 15,535 points were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken.

Land class	Photo points classified	Photo points stereo-classified	Inventory plots checked
Forest land	85,183	85,183	6,999
Unproductive/ reserved forest land	1,321	1,321	156
Nonforest land	102,312	2,916	7,914
Water	6,404	0	466
Total	195,220	89,420	15,535

2. The second phase of the survey was to sample ground plots. The plot selection and measurement procedures of phase two of the new Wisconsin survey design are outlined in figure 2.

From the new photo points, a random sample of ground plots were established and land use, volume, mortality and cutting were recorded. At each forest ground plot location, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. These locations were monumented for future remeasurement.

On the old inventory photo points (old plot locations), we used a somewhat different procedure. Old plots were either remeasurable (monumented) or

[2]*For more information on STEMS, see: Belcher, D. L.; Holdaway, M. R.; Brand, G. J. A description of STEMS: The stand and tree evaluation and modeling system. Gen. Tech. Rep. NC-79. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1981. 18 p.*

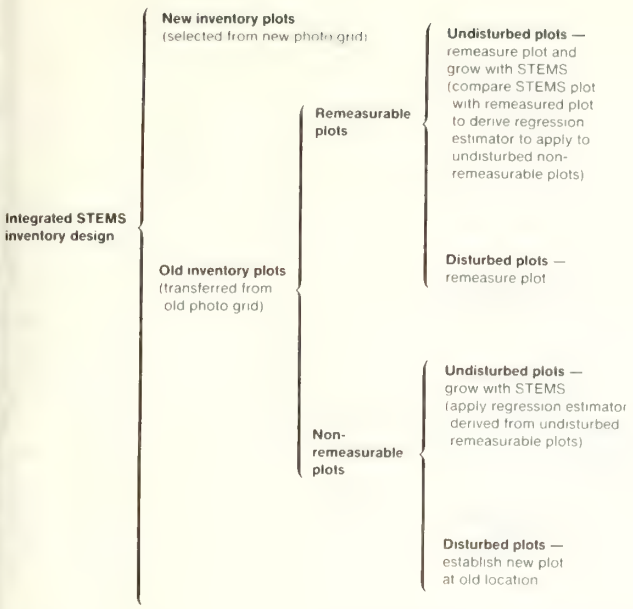
Integrated STEMS inventory design
New inventory plots (selected from new photo grid)
Old inventory plots (transferred from old photo grid)
Remeasurable plots
Non-remeasurable plots
Undisturbed plots — remeasure plot and grow with STEMS (compare STEMS plot with remeasured plot to derive regression estimator to apply to undisturbed non-remeasurable plots)
Disturbed plots — remeasure plot
Undisturbed plots — grow with STEMS (apply regression estimator derived from undisturbed remeasurable plots)
Disturbed plots — establish new plot at old location

Figure 2.—*Logic structure for the 1983 Wisconsin sample design.*

nonremeasurable (not monumented and thus difficult to relocate). Within both of these groups, old plots were additionally identified as undisturbed or disturbed. The remeasurable old inventory photo points which are classified as forest undisturbed were remeasured on the ground to obtain current land use, volume, growth, and removals data. Additionally, all forest undisturbed remeasurable plots were projected to the current time using STEMS to provide estimates of current volume and growth. The comparison of the projected and observed values on these plots provided regression estimators to adjust the projected values of the undisturbed nonremeasurable plots. All disturbed remeasurable plots were remeasured on the ground to assess changes since the last inventory.

Disturbance as used here refers to any change on a plot that can be detected on aerial photos and that the STEMS growth processor cannot predict, such as catastrophic mortality, cutting, seedling stands, and land use change.

The nonremeasurable forest points are those that were not monumented during the 1968 inventory. STEMS updated these old undisturbed plots, producing an estimate of current data. Thus these points became ground plots even though the information was obtained without actually visiting the plot. For points classified as disturbed, a new ground plot was established as close to the old location as possible. This allowed information about land use trends to be recorded even though the old plot could not be exactly relocated for remeasurement.

The estimation procedure for computing statistics from this sampling design was more complicated than the simple two-phase estimation procedure used in the past. In fact, this procedure yielded two independent samples, one coming from the new photo points and the other from the old photo points that were remeasured or projected. A more detailed description of the sampling design is available in a separate publication.[3]

3. Statistics on timber utilization during 1981 were obtained from mill surveys. The Wisconsin Department of Natural Resources canvassed resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-State sawmills, pulpmills, and veneer mills to determine their use of Wisconsin timber. Fuelwood and fencepost output was based on a sample of public and private landowners to determine their production of fuelwood and fenceposts. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Wisconsin primary wood-using plants.

4. A total of 2,568 felled trees on 133 active logging operations were measured throughout the State during 1981-1982 to develop wood utilization factors for converting timber products output to timber removals for saw logs and pulpwood. Factors for all other products were obtained during the 1966-1967 Wisconsin utilization study.

5. Field data were sent to St. Paul, Minnesota, to be processed and analyzed.

COMPARING WISCONSIN'S FOURTH INVENTORY WITH THE THIRD INVENTORY

Data from new forest inventories are often compared with data from earlier inventories to determine trends in forest resources. However, changes in procedures and definitions between surveys often make it necessary to adjust earlier survey data so that they are comparable to data from the new survey. A consistency check was made for each Unit to ensure that the changes observed between inventories reflect actual changes in the resource and not changes in definitions or procedures.

Between the 1968 and 1983 inventories of Wisconsin some procedural changes were made in the method of deriving annual mortality estimates, computing volume, and determining forest type.

Mortality figures for the 1968 inventory were based on field estimates from nonremeasurement plots. Information gathered on remeasurement plots during the current inventory was used to adjust the 1968 mortality figures. This adjustment also

[3]*Hahn, J. T.; Hansen, M. H.; Fairweather, S. E. A sampling procedure incorporating a growth simulator. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. (Manuscript in process).*

changed the estimate of net growth for the 1968 inventory. Additionally, the old spruce-fir forest type was separated into two distinct types for the new inventory—white spruce and balsam fir. Comparisons with old data may be made by adding the two new types together. The 1968 volumes for hard and soft maple in Northeast Wisconsin were adjusted upward by 17 percent due to the discovery that the volume equations used for these species in 1968 were in error. Ownership class definitions also changed between the two inventories. A new definition of Indian ownership shifted a large area reported in 1968 as forest industry to the Indian ownership class in this report. Also, a change in the definition of farm ownership shifted area reported in 1968 as farmer to the miscellaneous private ownership class in this report.

Except for the net growth and mortality information, volumes of hard and soft maple, and some ownership classes, the old and new inventories of this region may be directly compared.

Checking for Consistency

A test was made to ensure that it was possible to move from the 1968 resource statistics to the 1983 values by means of Timber Resource Analysis System (TRAS), a USDA Forest Service computer program for updating, backdating, and projecting timber volume, growth, mortality, and removals. Using growth rates, mortality rates, and removals rates for the period between the two surveys, TRAS projected the inventory from 1968 to 1983. The program prints out volumes by diameter class for softwoods and hardwoods for selected years in the period. Thus, any inconsistencies in volume, growth, mortality, and removals were identified and resolved.

TRAS generates an estimate of what total removals had to be for the inventory to have changed as it did between surveys, given the volume, growth, and mortality data. Estimates of removals for products and for logging residues, two of the three components of total timber removals, were available from an independent utilization study. An estimate of "other" removals (see Definition of Terms in Appendix), the third component of total removals, was made by subtracting the first two removals components from the TRAS-generated total removals estimate. This estimate of "other" removals was compared with findings from remeasurement plots and new plots (stump counts and land use change) to check its validity. Total removals were average annual removals because the estimate of "other" removals was based on a removals trend line from 1968 to 1983.

LOG GRADE

In Wisconsin the butt log of every sawtimber tree on every full permanent sample plot was graded for quality. Additionally, all of the logs in a smaller sample of trees throughout the State were graded. The volume yield by log grade for each tree in the latter sample was used to distribute the volume of trees in the former sample into log-grade classes. The resulting volumes by log-grade classes were expanded to provide an estimate for the entire State.

Logs were graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber."[4] The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded as follows:

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[4]*Vaughn, C. L.; Wollin, C. A.; McDonald, K. A.; Bulgrin, E. H. Hardwood log grades for standard lumber. Res. Pap. FPL-63. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory; 1966. 52 p.*

Forest Service standard grades for hardwood factory saw logs

Grading factors		Specifications							
		Log grade 1			Log grade 2				Log grade 3
Position in tree		Butts only	Butts and uppers		Butts and uppers				Butts and uppers
Scaling diameter, inches		[1]13-15	16-19	20+	[2]11+		12+		8+
Length without trim, feet			10+		10+	8-9	10-11	12+	8+
Required clear cuttings[3] of each of three best faces[4]	Min. length, feet	7	5	3	3	3	3	3	2
	Max. number	2	2	2	2	2	2	3	No Limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep and crook allowance	For logs with less than one-fourth of end in sound defects		15 percent			30 percent			50 percent
	For logs with more than one-fourth of end in sound defects		10 percent			20 percent			35 percent
Maximum scaling deduction			40 percent[5]			50 percent[6]			50 percent

[1]Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.
[2]Ten-inch logs of all species can be #2 if they otherwise meet requirements for small #1's.
[3]A clear cutting is a portion of a face, extending the width of the face, that is free of defects.
[4]A face is one-fourth of the surface of the log as divided lengthwise.
[5]Otherwise #1 logs with 41-60 percent deductions can be #2.
[6]Otherwise #2 logs with 51-60 percent deductions can be #3.

Forest Service standard specifications for hardwood construction logs (tie and timber logs)[1]

Position in tree		Butt and upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		One-fourth of the diameter at the small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of one-third of the log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed one-third of the log diameter at point of occurrence.
	Holes	Any number provided none has a diameter over one-third of the log diameter at point of occurrence, and none extends more than 3 inches into included timber.[2]
Unsound surface defects		Same requirements as for sound defects if they extend into included timber.[2] No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit one shake not to exceed one-fourth the scaling diameter and will admit a longitudinal split not extending more than 5 inches into the contained timber.

[1]These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only nonfactory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection for construction logs is given first priority, it may be necessary to subdivide the class into grades.

[2]Included timber is always square, and dimension is judged from small end.

Softwood species were graded according to the following specifications on the following page.

Log Grades for Eastern White Pine

Log grade	Minimum size Diameter	Minimum size Length[1]	Sweep or crook allowance	Total cull allowance including sweep	Maximum weevil injury	Allowable knot size (inches)[2] on three best faces or minimum clearness of four faces
	Inches	*Feet*	--------*Percent*--------		*Number*	*Inches*
1	12 & 13	8-16	20	50	0	Four faces clear full length
	14 +	10-16	20	50	0	Two faces clear full length, or four faces clear 50 percent length (6 feet min. length)[3]
2	6 +	8-16	30	50	0	Sound knots l.e.[4] D/6 and less than 3 inches[5] Unsound knots: l.e. 1½ inches and for: butt, lots l.e. D/12 upper logs l.e. D/10 or four faces clear 50 percent of length
3	6 +	8-16	40	50	8-foot logs 1 weevil 10-foot + logs: 2 weevil	Sound knots l.e. D/3 and less than 5 inches. Unsound knots l.e.D/6 and less than 2½ inches.
4	6 +	8-16	50	50	No limit	No limit

[1]Plus trim.
[2]Disregard all knots less than ½-inch diameter in all grades
[3]The sum of the diameter of sound knots plus twice the sum of the diameter of unsound knots (in inches) is less than or equal to ½ of the diameter of the log (inches).
[4]l.e. means less than or equal to
[5]D means d.i.b. of log at location of knot

LOG GRADES FOR JACK PINE AND RED PINE

Grade 1: logs with three or four clear faces.[5]

Grade 2: logs with one or two clear faces.

Grade 3: logs with no clear faces.

After the tentative log grade is established from above, the log will be degraded one grade for each of the following, except that no log can be degraded below grade 3. Net scale after deduction for defect must be at least 50 percent of the gross contents of the log.

1. *Sweep.* Degrade any tentative 1 or 2 log one grade if sweep amounts to 3 or more inches and equals or exceeds one-third the diameter inside bark at small end.

2. *Heart rot.* Degrade any tentative 1 or 2 log grade if conk, massed hyphae, or other evidence of advance heart rot is found anywhere in it.

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[5]*A face is one-fourth of the circumference in width extending full length of the log. Clear faces are those free of: knots measuring more than ½ inches in diameter, overgrown knots of any size, and holes more than ¼ inches in diameter. Faces may be rotated to obtain the maximum number of clear ones.*

LOG GRADES FOR ALL OTHER SOFTWOOD LOGS

Grade 1

1. Logs must be 16 inches in diameter or larger, 10 feet or longer, and with deduction for defect not more than 30 percent of gross scale.

2. Logs must be at least 75 percent clear on each of three faces.

3. All knots outside clear cutting must be sound and not over 2½-inches in size.

Grade 2

1. Logs must be 12 inches in diameter or larger, 10 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.

2. Logs must be at least 50 percent clear on each of three faces or 75 percent clear on two faces.

Grade 3

1. Lots must be 6 inches in diameter or larger, 8 feet or longer, and with a net scale after deduction for defect or at least 50 percent of the gross contents of the log.

Note: (A) Diameters are diameter inside bark (d.i.b.) at small end of log.
(B) Percent clear refers to percent clear in one continuous section.

TREE SPECIES GROUPS IN WISCONSIN[6]

SOFTWOODS
- Jack pine ..... *Pinus banksiana*
- Red pine ..... *Pinus resinosa*
- Eastern white pine ..... *Pinus strobus*
- White spruce ..... *Picea glauca*
- Black spruce ..... *Picea mariana*
- Balsam fir ..... *Abies balsamea*
- Eastern hemlock ..... *Tsuga canadensis*
- Tamarack ..... *Larix laricina*
- Eastern redcedar ..... *Juniperus virginiana*
- Northern white-cedar ..... *Thuja occidentalis*
- Other softwoods
  - Norway spruce ..... *Picea abies*
  - Scotch pine ..... *Pinus sylvestris*

HARDWOODS
- White oaks
  - White oak ..... *Quercus alba*
  - Swamp white oak ..... *Quercus bicolor*
  - Bur oak ..... *Quercus macrocarpa*
- Select red oak
  - Northern red oak ..... *Quercus rubra*
- Other red oaks
  - Northern pin oak ..... *Quercus ellipsoidalis*
  - Black oak ..... *Quercus velutina*
- Select hickory
  - Shagbark hickory ..... *Carya ovata*
- Other hickory
  - Pignut hickory ..... *Carya glabra*
  - Bitternut hickory ..... *Carya cordiformis*
- American basswood ..... *Tilia americana*
- Beech ..... *Fagus grandifolia*
- Yellow birch ..... *Betula alleghaniensis*
- Hard maple
  - Sugar maple ..... *Acer saccharum*
  - Black maple ..... *Acer nigrum*
- Soft maple
  - Red maple ..... *Acer rubrum*
  - Silver maple ..... *Acer saccharinum*
- Elm
  - American elm ..... *Ulmus americana*
  - Slippery elm ..... *Ulmus rubra*
  - Rock elm ..... *Ulmus thomasii*
- Black ash ..... *Fraxinus nigra*
- White and green ash
  - White ash ..... *Fraxinus americana*
  - Green ash ..... *Fraxinus pennsylvanica*
- Eastern cottonwood ..... *Populus deltoides*
- Black willow ..... *Salix nigra*
- Hackberry ..... *Celtis occidentalis*
- Balsam poplar ..... *Populus balsamifera*
- Bigtooth aspen ..... *Populus grandidentata*
- Quaking aspen ..... *Populus tremuloides*
- Paper birch ..... *Betula papyrifera*
- River birch ..... *Betula nigra*
- Black cherry ..... *Prunus serotina*
- Black walnut ..... *Juglans nigra*
- Butternut ..... *Juglans cinerea*
- Other hardwoods
  - Boxelder ..... *Acer negundo*
  - Black locust ..... *Robinia pseudoacacia*
  - Honeylocust ..... *Gleditsia triacanthos*
  - Red mulberry ..... *Morus rubra*
  - Northern catalpa ..... *Catalpa speciosa*
- Noncommercial species
  - Mountain maple ..... *Acer spicatum*
  - Eastern hophornbeam .... *Ostrya virginiana*
  - Peachleaf willow ..... *Salix amygdaloides*
  - American hornbeam ... *Carpinus caroliniana*
  - Hawthorn ..... *Crataegus* spp.
  - Striped maple ..... *Acer pensylvanicum*
  - Mountain-ash ..... *Sorbus* spp.
  - Pin cherry ..... *Prunus pensylvanica*
  - Chokecherry ..... *Prunus virginiana*

[6]*The common and scientific names are based on: Little, Elbert L. Checklist of native and naturalized trees of the United States. Agric. Handb. 541. Washington, D.C.: U.S. Department of Agriculture, Forest Service; 1979. 375 p.*

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.
1 pound = 0.454 kilograms.
1 ton = 0.907 metric tons.

DEFINITION OF TERMS

Acceptable trees.—Growing-stock trees of commercial species that meet specified standards of size, quality, and merchantability.

Basal area.—The area in square feet of the cross section at breast height of a single tree. When the basal areas of all live trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass.—The total above-ground weight, excluding foliage, of all live trees reported in green tons. Biomass is made up of 4 components:

Stumps.—Biomass of a tree from ground level to a height of 1-foot.

Boles.—Biomass of a tree from the stump to a 4-inch top.

Tops and limbs.—Biomass of a tree above a 4-inch top and all limbs.

1- to 5-inch trees.—Above ground biomass of all live trees 1- to 5-inches in diameter at breast height.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.—Lands owned by counties and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Cropland.—Land under cultivation within the past 24 months; including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, and land in soil improvement crops, but excluding land cultivated in developing improved pasture.

Cull.—Portions of a tree that are unusable for industrial wood products, because of rot, form, or other defect.

Diameter classes.—A classification of trees based on diameter outside bark, measured at breast height (4.5 feet above the ground). (Note: d.b.h. is the common abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h. inclusive.)

Farm.—Any place from which $1,000 or more of agricultural products were produced and sold during the year.

Farmer-owned land.—Land owned by farm operators. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide. Also see definitions for land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, and water.

Forest trees.—Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Forest type.—A classification of forest land based upon the species forming a plurality of live tree stocking. Major forest types in Wisconsin are:

Jack pine.—Forests in which jack pine comprises a plurality of the stocking. (Common associates include eastern white pine, red pine, aspen, birch, and oak.)

Red pine.—Forests in which red pine comprises a plurality of the stocking. (Common associates include eastern white pine, jack pine, aspen, birch, and oak.)

White pine.—Forests in which eastern white pine comprises a plurality of the stocking. (Common associates include red pine, jack pine, aspen, birch, and maple.)

Balsam fir.—Forests in which balsam fir and white spruce comprise a plurality of stocking with balsam fir the most common. (Common associates include aspen, maple, birch, northern white-cedar, and tamarack.)

White spruce.—Forests in which white spruce and balsam fir comprise a plurality of the stocking with white spruce the most common. (Common associates include aspen, maple, birch, northern white-cedar, and tamarack.)

Black spruce.—Forests in which swamp conifers comprise a plurality of the stocking with black spruce the most common. (Common associates include balsam fir, tamarack, and northern white-cedar.)

Northern white-cedar.—Forests in which swamp conifers comprise a plurality of the stocking with northern white-cedar the most common. (Common associates include balsam fir, tamarack, and black spruce.)

Tamarack.—Forests in which swamp conifers comprise a plurality of the stocking with tamarack the most common. (Common associates include black spruce, balsam fir, and northern white-cedar.)

Oak-hickory.—Forests in which northern red oak, white oak, bur oak, or hickories, singly or in combination, comprise a plurality of the stocking. (Common associates include jack pine, elm, and maple.)

Elm-ash-soft maple.—Forests in which lowland elm, ash, cottonwood, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include birch, aspen, and balsam fir.)

Maple-birch.—Forests in which sugar maple, basswood, yellow birch, upland American elm, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include white pine, elm, hemlock, and basswood.)

Aspen.—Forests in which quaking aspen or bigtooth aspen, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, pines, balsam fir, and paper birch.)

Paper birch.—Forests in which paper birch comprises a plurality of the stocking. (Common associates include maple, aspen, and balsam fir.)

Exotic.—Forests in which species not native to Wisconsin comprise a plurality of the stocking. (Mostly Scotch pine plantations.)

Gross area.—The entire area of land and water as determined by the Bureau of the Census, 1980.

Growing-stock trees.—Live trees of commercial species qualifying as acceptable trees. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and over, from a 1-foot stump to a minimum 4-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs. Cubic feet can be converted to cords by dividing by 79 cubic feet per solid wood cord.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.—Includes former croplands, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing, by cultivation, seeding, irrigation, or clearing of trees or brush and less than 16.7 percent stocked with trees.

Indian land.—All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Land area.—A. *Bureau of the Census*. The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

B. *Forest Inventory and Analysis*. The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Live trees.—Growing-stock, rough and rotten trees 1 inch d.b.h. and larger.

Log grades.—A classification of logs based on external characteristics as indicators of quality or value. (See Appendix for specific grading factors used.)

Logging residues.—The unused portions of growing-stock trees cut or killed by logging.

Maintained road.—Any road, hard-topped or other surfaces, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.—Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Merchantable.—Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

Miscellaneous federal land.—Federal land other than National Forest.

Miscellaneous private land.—Privately owned land other than forest-industry and farmer-owned land.

Mortality.—The volume of sound wood in growing-stock and sawtimber trees that die annually.

National Forest land.—Federal lands that have been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Net annual growth of growing stock.—The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber.—The annual change in the volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Net volume.—Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.—(a) Unproductive forest land and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in area, to qualify as nonforest land.)

a. *Nonforest land without trees*.—Nonforest land with no live trees present.

b. *Nonforest land with trees*.—Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other removals.—Growing-stock trees removed but not utilized for products, or trees left standing but "removed" from the commercial forest land classification by land use change. Examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Ownership.—Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.—The amount of commercial forest land owned by one owner, regardless of the number or parcels.

Owner tenure.—The length of time a property has been held by the owner.

Pasture and range.—Land which is currently improved for grazing by cultivation seeding or irrigation plus land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Physiographic class.—A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are:

Xeric sites.—Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Xeromesic sites.—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. Example: dry oak ridge.

Mesic sites.—Deep, well-drained soils. Growth and species occurrence are limited only by climate.

Hydromesic sites.—Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent. Example: better drained bottomland hardwood sites.

Hydric sites.—Very wet sites where excess water seriously limits both growth and species occurrence. Example: wet, frequently flooded river bottoms and spruce bogs.

Plant byproducts.—Plant residues used for products such as mulch, pulp chips, and fuelwood.

Plant residues.—Wood and bark materials generated at manufacturing plants during production of other products.

Poletimber stands.—(See stand-size class.)

Poletimber trees.—Growing-stock trees of commercial species at least 5 inches d.b.h., but smaller than sawtimber size.

Productive-deferred.—Forest land sufficiently productive to qualify as commercial forest land but presently withdrawn from timber utilization because it is being considered for possible inclusion into the Wilderness system.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land but withdrawn from timber utilization through statute, administrative regulation, designation, or exclusive use for Christmas tree production, as indicated by annual shearing.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet Regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume in a tree is rotten.

Rough trees.—(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet Regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Roundwood products.—Logs, bolts, or other round sections (including chips from roundwood) cut from trees for industrial or consumer uses. (Note: Includes saw logs, veneer logs and bolts; cooperage logs and bolts; pulpwood; fuelwood; piling; poles; posts; hewn ties; mine timbers; and various other round, split, or hewn products.)

Salvable dead trees.—Standing or down dead trees that are considered merchantable by Regional standards.

Saplings.—Live trees 1 to 5 inches d.b.h.

Sapling-seedling stands.—(See stand-size class.)

Saw log.—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) for softwoods of 7 inches (9 inches for hardwoods) or other combinations of size and defect specified by Regional standards.

Saw log portion.—That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber stands.—(See stand-size class.)

Sawtimber trees.—Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting Regional specifications for freedom from defect. Softwoods must be at least 9 inches d.b.h. Hardwoods must be at least 11 inches d.b.h.

Sawtimber volume.—Net volume of the saw log portion of live sawtimber in board feet, International 1/4-inch rule, from stump to a minimum 7 inches top diameter outside bark (d.o.b.) for softwoods and a minimum 9 inches top d.o.b. for hardwoods.

Seedlings.—Live trees less than 1 inch d.b.h. that are expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Short-log (rough tree).—Sawtimber-size trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Shrub.—A woody, perennial plant differing from a perennial herb in its persistent and woody stem(s), and less definitely from a tree in its lower stature and/or the general absence of a well-defined main stem. For this report shrubs were separated somewhat arbitrarily into tall and low shrubs as follows:

Tall shrubs.—Shrubs normally taller than 1.6 to 3.2 feet (0.5 to 1.0 meter).

Low shrubs.—Shrubs normally shorter than 1.6 to 3.2 feet (0.5 to 1.0 meter). (Woody perennial vines, such as grape, were included with low shrubs.)

Shrub biomass.—The total above-ground weight (including the bark) of selected species of shrubs and trees less than 1 inch d.b.h.

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.—An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.—A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class.—Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.—The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.—A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber or seedlings and saplings.

Sawtimber stands.—Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.—Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and/or seedlings.

Nonstocked stands.—Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.—Land owned by States, or land leased to these governmental units for 50 years or more.

Stocking.—The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking per cent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h.

Stands are grouped into the following stocking classes:

Overstocked stands.—Stands in which stocking of trees is 134.0 percent or more.

Fully stocked stands.—Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium stocked stands.—Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly stocked stands.—Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.—Commercial forest land on which stocking of trees is less than 16.7 percent.

Timber removals from growing stock.—The volume of sound wood in live sawtimber and poletimber trees removed annually for forest products (including roundwood products and logging residues) and for other removals. Roundwood products are logs, bolts, or other round sections cut from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals are growing-stock trees removed by cultural operations such as timber stand improvement work, and by land clearing and changes in land use.

Timber removals from sawtimber.—The net board-foot volume of live sawtimber trees removed

for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output.—All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree biomass.—The total aboveground weight (including the bark) of all live trees.

Tree size class.—A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land—Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural conditions because of adverse site conditions. (Note: Adverse conditions include shallow soils, dry climate, poor drainage, high elevation, steepness, and rockiness.)

Upper stem portion.—That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4 inches outside bark or to the point where the central stem breaks into limbs.

Urban and other areas.—Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards, cemeteries, roads; railroads; airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified land use class.

Water.—(a) *Bureau of the Census*.—Permanent inland water surfaces, such as lakes, reservoirs, and ponds having 40 acres or more of area; streams, sloughs, estuaries, and canals one-eighth of a statute mile or more in width.

(b) *Noncensus*.—Permanent inland water surfaces, such as lakes, reservoirs, and ponds having 1-39.9 acres of area; streams, sloughs, estuaries, and canals 120 feet to one-eighth of a statute mile in width.

Wooded pasture.—Improved pasture with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing.

Wooded strip.—An acre or more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide.

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(In thousand acres)

Land class	1968	1983
Forest land		
Commercial forest land		
Jack pine	727.6	546.5
Red pine	310.2	478.2
White pine	177.6	225.6
Balsam fir	552.8	419.4
White spruce	75.2	61.4
Black spruce	235.9	273.0
Northern white-cedar	302.4	370.7
Tamarack	222.2	222.7
Oak-hickory	2,664.9	2,858.7
Elm-ash-soft maple	1,157.6	1,240.6
Maple-birch	3,521.6	3,996.9
Aspen	3,664.6	3,261.5
Paper birch	554.4	641.6
Exotic	--	2.2
Nonstocked	369.8	160.4
Subtotal	14,536.8	14,759.4
Noncommercial forest land		
Unproductive	374.4	331.0
Productive-reserved	34.2	260.9
Subtotal	408.6	591.9
Total	14,945.4	15,351.3
Nonforest land		
Cropland	12,043.3	12,712.4
Pasture and range	1,845.1	2,128.7
Other	6,024.7	4,640.4
Total	19,913.1	19,481.5
Total land	34,858.5	34,832.8
Water (Bureau of the Census)	1,080.1[1/]	1,115.6[2/]
Total land and water	35,938.6[1/]	35,948.4[2/]

[1/] U.S. Department of Commerce, Bureau of Census, 1960.

[2/] U.S. Department of Commerce, Bureau of Census, 1980.

Table 2.--Area of land by land use class and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Land use class	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Forest land						
Commercial forest	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2
Unproductive forest	331.0	140.8	165.8	21.5	--	2.9
Productive reserved	260.9	52.0	114.6	30.1	38.8	25.4
Total	15,351.3	4,021.3	5,431.2	3,002.5	1,958.8	937.5
Nonforest land						
Nonforest with trees						
Cropland with trees	54.1	3.9	12.6	9.9	7.4	20.3
Improved pasture with trees	322.3	34.7	60.1	99.4	115.9	12.2
Wooded strips	45.0	5.8	8.1	20.9	10.2	--
Idle farmland with trees	110.5	21.5	16.0	60.5	12.5	--
Marsh with trees	312.6	40.1	90.6	149.4	12.7	19.8
Urban and other with trees	244.3	56.4	56.9	69.1	8.7	53.2
Windbreaks	40.8	5.0	10.6	2.6	12.2	10.4
Wooded pasture	112.1	--	30.3	32.0	47.4	2.4
Subtotal	1,241.7	167.4	285.2	443.8	227.0	118.3
Nonforest without trees						
Cropland without trees	12,658.3	744.7	1,259.7	2,431.1	2,895.2	5,327.6
Improved pasture without trees	1,694.3	174.6	255.0	407.3	549.2	308.2
Idle farm without trees	195.2	55.8	14.6	60.3	20.5	44.0
Marsh without trees	1,206.0	215.2	374.2	259.6	55.1	301.9
Other farm-farmstead	364.2	36.4	23.2	88.8	66.0	149.8
Urban and other	2,028.7	244.9	269.2	449.4	372.1	693.1
Noncensus water	93.1	39.9	13.1	27.4	6.6	6.1
Subtotal	18,239.8	1,511.5	2,209.0	3,723.9	3,964.7	6,830.7
Total	19,481.5	1,678.9	2,494.2	4,167.7	4,191.7	6,949.0
Total land	34,832.8	5,700.2	7,925.4	7,170.2	6,150.5	7,886.5
Water (Bureau of the Census)[1/]	1,115.6	262.8	290.3	114.6	136.6	311.3
Total land and water[1/]	35,948.4	5,963.0	8,215.7	7,284.8	6,287.1	8,197.8

Table 3.--Area of commercial forest land by ownership class and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Ownership class	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
National Forest	1,242.3	548.8	693.5	--	--	--
Miscellaneous federal	176.2	3.9	7.3	130.6	29.8	4.6
State	569.4	193.7	176.8	96.6	34.8	67.5
County and municipal	2,179.8	646.9	1,109.8	399.3	10.9	12.9
Indian	353.7	254.5	94.6	4.6	--	--
Forest industry	1,156.0	485.3	529.2	126.0	--	15.5
Farmer	3,513.7	381.6	450.2	996.7	1,255.9	429.3
Misc. private-corp.	665.9	163.1	224.0	129.5	92.8	56.5
Misc. private-indiv.	4,902.4	1,150.7	1,865.4	1,067.6	495.8	322.9
All owners	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2

Table 4.--Area of land and forest land by county, Wisconsin, 1983

County	All land[1]	Forest land[2]			Commercial forest as a percent of land area	All forest as a percent of land area	Sampling error for commercial forest land (percent)
		All forest	Noncommercial[3]	Commercial[4]			
NORTHEAST UNIT							
Florence	310.8	254.2	10.2	244.0	79	82	1.74
Forest	647.1	543.9	51.2	492.7	76	84	1.22
Langlade	559.0	391.7	17.2	374.5	67	70	1.40
Lincoln	567.1	411.2	17.4	393.8	69	73	1.37
Menominee	229.7	213.1	--	213.1	93	93	1.86
Marinette	893.1	661.0	21.3	639.7	72	74	1.07
Oconto	641.4	357.4	10.3	347.1	54	56	1.46
Oneida	723.2	531.1	34.0	497.1	69	73	1.22
Shawano	574.0	259.2	4.0	255.2	45	45	1.70
Vilas	554.8	398.5	27.2	371.3	67	72	1.41
All counties	5,700.2	4,021.3	192.8	3,828.5	67	71	0.44
NORTHWEST UNIT							
Ashland	670.9	569.1	65.3	503.8	75	85	1.16
Barron	553.4	165.7	7.0	158.7	29	30	2.07
Bayfield	935.8	780.1	39.6	740.5	79	83	0.96
Burnett	523.3	335.9	18.8	317.1	61	64	1.46
Douglas	835.5	640.3	12.4	627.9	75	77	1.04
Iron	481.0	400.1	22.2	377.9	79	83	1.34
Polk	588.4	230.0	9.2	220.8	38	39	1.75
Price	803.8	598.4	47.6	550.8	69	74	1.11
Rusk	584.4	373.2	10.1	363.1	62	64	1.37
Sawyer	803.3	638.9	31.2	607.7	76	80	1.06
Taylor	624.2	368.0	13.6	354.4	57	59	1.38
Washburn	521.4	331.5	3.4	328.1	63	64	1.44
All counties	7,925.4	5,431.2	280.4	5,150.8	65	69	0.36
CENTRAL UNIT							
Adams	414.7	236.7	2.4	234.3	57	57	1.24
Chippewa	650.9	232.4	6.7	225.7	35	36	1.26
Clark	779.6	316.1	--	316.1	41	41	1.07
Eau Claire	408.3	156.3	1.8	154.5	38	38	1.53
Jackson	638.6	378.9	7.5	371.4	58	59	0.98
Juneau	495.5	256.0	3.9	252.1	51	52	1.19
Marathon	997.9	365.4	6.9	358.5	36	37	1.00
Marquette	290.9	94.3	--	94.3	32	32	1.95
Monroe	578.3	247.3	2.3	245.0	42	43	1.21
Portage	518.5	174.3	--	174.3	34	34	1.44
Waupaca	482.8	181.1	8.5	172.6	36	38	1.44
Waushara	401.7	157.2	11.6	145.6	36	39	1.57
Wood	512.5	206.5	--	206.5	40	40	1.32
All counties	7,170.2	3,002.5	51.6	2,950.9	41	42	0.35

(Table 4 continued on next page)

[1] 1980 Bureau of the Census estimates.

[2] Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover; excludes land currently developed for nonforest use such as urban or heavily settled residential or resort areas, city parks, orchards, improved roads, or improved pasture land. The minimum forest area classified was 1 acre. Classified as forest were roadside, streamside, and shelterbelt strips of timber with a crown width of at least 120 feet and unimproved roads and trails, streams, and clearings in forested areas if less than 120 feet wide.

[3] Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive public forest land withdrawn from commercial timber production through statute or administrative regulation.

[4] Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

(able 4 continued)

County	All land[1/]	Forest land[2/]			Commercial forest as a percent of land area	All forest as a percent of land area	Sampling error for commercial forest land (percent)
		All forest	Noncommercial[3/]	Commercial[4/]			
SOUTHWEST UNIT							
Buffalo	447.6	193.4	5.5	187.9	42	43	1.26
Crawford	362.1	168.8	1.0	167.8	46	47	1.34
Dunn	546.2	171.1	1.1	170.0	31	31	1.33
Grant	732.2	186.4	1.9	184.5	25	26	1.27
Iowa	486.5	140.7	4.7	136.0	28	29	1.48
La Crosse	292.6	121.6	--	121.6	42	42	1.57
Lafayette	405.9	38.2	0.6	37.6	9	9	2.82
Pepin	147.8	53.9	0.5	53.4	36	37	2.37
Pierce	369.0	102.1	1.5	100.6	27	28	1.72
Richland	374.1	159.4	0.7	158.7	42	43	1.37
St.Croix	462.5	77.7	4.8	72.9	16	17	2.03
Sauk	536.2	192.0	10.3	181.7	34	36	1.28
Tempealeau	470.9	151.1	4.1	147.0	31	32	1.43
Vernon	516.9	202.4	2.1	200.3	39	39	1.22
All counties	6,150.5	1,958.8	38.8	1,920.0	31	32	0.39
SOUTHEAST UNIT							
Brown	335.5	49.1	1.7	47.4	14	15	1.83
Calumet	208.9	25.1	0.4	24.7	12	12	2.54
Columbia	493.5	84.4	0.2	84.2	17	17	1.37
Dane	770.9	91.1	0.9	90.2	12	12	1.32
Dodge	567.9	27.8	0.2	27.6	5	5	2.39
Door	314.5	120.0	13.7	106.3	34	38	1.22
Fond du Lac	463.8	35.1	1.2	33.9	7	8	2.16
Green	373.3	30.9	--	30.9	8	8	2.26
Green Lake	228.2	21.0	--	21.0	9	9	2.74
Jefferson	359.6	29.3	0.3	29.0	8	8	2.34
Kenosha	174.5	11.7	0.9	10.8	6	7	3.83
Kewaunee	219.5	36.8	--	36.8	17	17	2.07
Manitowoc	380.1	57.4	0.9	56.5	15	15	1.67
Milwaukee	154.6	--	--	--	--	--	5/
Outagamie	411.0	70.7	--	70.7	17	17	1.49
Ozaukee	150.3	16.3	--	16.3	11	11	3.12
Racine	214.1	17.7	0.8	16.9	8	8	3.06
Rock	463.0	28.1	1.2	26.9	6	6	2.43
Sheboygan	329.8	52.6	1.1	51.5	16	16	1.74
Walworth	355.6	35.8	0.2	35.6	10	10	2.10
Washington	275.5	45.8	0.1	45.7	17	17	1.85
Waukesha	354.8	36.6	4.5	32.1	9	10	2.22
Winnebago	287.6	14.2	--	14.2	5	5	3.34
All counties	7,886.5	937.5	28.3	909.2	12	12	0.42
State total	34,832.8	15,351.3	591.9	14,759.4	42	44	0.22

[1/] 1980 Bureau of the Census estimates.

[2/] Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover; excludes land currently developed for nonforest use such as urban or heavily settled residential or resort areas, city parks, orchards, improved roads, or improved pasture land. The minimum forest area classified was 1 acre. Classified as forest were roadside, streamside, and shelterbelt strips of timber with a crown width of at least 120 feet and unimproved roads and trails streams, and clearings in forested areas if less than 120 feet wide.

[3/] Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive public forest land withdrawn from commercial timber production through statute or administrative regulation.

[4/] Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

[5/] There was no data in this cell.

Table 5.--Area of commercial forest land by ownership class and site class, Wisconsin, 1983

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
National Forest	1,242.3	--	--	65.2	376.9	575.0	225.2
Miscellaneous federal	176.2	--	--	--	32.9	70.6	72.7
State	569.4	--	--	17.4	98.1	241.1	212.8
County and municipal	2,179.8	--	--	41.0	434.1	1,029.9	674.8
Indian	353.7	--	--	10.9	81.6	190.7	70.5
Forest industry	1,156.0	--	--	24.9	229.2	486.9	415.0
Farmer	3,513.7	--	--	117.4	833.3	1,450.1	1,112.9
Misc. private-corp.	665.9	--	2.2	15.6	136.8	295.4	215.9
Misc. private-indiv.	4,902.4	--	4.2	161.9	1,042.7	2,166.3	1,527.3
All owners	14,759.4	--	6.4	454.3	3,265.6	6,506.0	4,527.1

Table 6.--Area of commercial forest land by ownership class and stand-volume class, Wisconsin, 1983

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1/])		
		Less than 1,500	1,500 to 5,000	5,000+
National Forest	1,242.3	480.3	599.3	162.7
Miscellaneous federal	176.2	104.9	52.4	18.9
State	569.4	275.3	216.5	77.6
County and municipal	2,179.8	1,187.7	812.2	179.9
Indian	353.7	71.7	118.7	163.3
Forest industry	1,156.0	538.2	422.9	194.9
Farmer	3,513.7	1,406.4	1,468.8	638.5
Misc. private-corp.	665.9	284.4	301.7	79.8
Misc. private-indiv.	4,902.4	2,338.1	1,938.8	625.5
All owners	14,759.4	6,687.0	5,931.3	2,141.1

[1/] International 1/4-inch rule.

Table 7.--Area of privately owned commercial forest land by ownership class, owner tenure, and size of holding, Wisconsin, 1983

(In thousand acres)

Ownership class and owner tenure class	All sizes	Size of holding (acres)								
		1-4	5-10	11-20	21-50	51-100	101-500	501-1,500	2,501-5,000	5,001+
Forest Industry										
1-4 years	78.6	--	--	--	--	3.5	1.9	11.2	1.8	60.2
5-9 years	134.1	--	--	--	--	4.2	2.0	9.2	1.7	117.0
10-19 years	331.1	--	--	--	5.0	--	2.0	14.4	7.1	302.6
20+ years	612.2	--	--	--	--	2.3	2.3	3.6	5.3	598.7
All classes	1,156.0	--	--	--	5.0	10.0	8.2	38.4	15.9	1,078.5
Farmer										
1-4 years	644.3	2.5	11.1	69.6	156.8	171.2	219.7	10.2	3.2	--
5-9 years	688.5	15.8	16.3	71.0	186.3	184.5	200.7	13.9	--	--
10-19 years	1,141.2	17.2	33.5	103.1	294.1	309.6	369.2	12.7	1.8	--
20+ years	1,039.7	16.6	40.5	103.6	264.4	289.2	312.6	11.1	1.7	--
All classes	3,513.7	52.1	101.4	347.3	901.6	954.5	1,102.2	47.9	6.7	--
Miscellaneous private corporation										
1-4 years	135.7	3.2	2.4	--	33.7	22.9	37.8	11.2	1.8	22.7
5-9 years	101.7	--	--	--	16.9	16.5	35.5	18.9	4.1	9.8
10-19 years	155.9	2.5	4.8	--	14.8	34.4	44.6	32.0	7.0	15.8
20+ years	272.6	--	--	3.9	15.1	21.6	62.9	78.3	24.9	65.9
All classes	665.9	5.7	7.2	3.9	80.5	95.4	180.8	140.4	37.8	114.2
Miscellaneous private individual										
1-4 years	1,260.6	30.3	60.3	98.7	452.7	314.3	286.9	13.7	1.8	1.9
5-9 years	1,186.5	38.0	66.2	96.9	389.1	293.8	279.9	22.6	--	--
10-19 years	1,434.2	37.3	58.3	82.6	438.4	340.9	411.7	61.6	3.4	--
20+ years	1,021.1	16.6	22.6	54.5	303.0	266.3	307.5	47.7	--	2.9
All classes	4,902.4	122.2	207.4	332.7	1,583.2	1,215.3	1,286.0	145.6	5.2	4.8
All private owners										
1-4 years	2,119.2	36.0	73.8	168.3	643.2	511.9	546.3	46.3	8.6	84.8
5-9 years	2,110.8	53.8	82.5	167.9	592.3	499.0	518.1	64.6	5.8	126.8
10-19 years	3,062.4	57.0	96.6	185.7	752.3	684.9	827.5	120.7	19.3	318.4
20+ years	2,945.6	33.2	63.1	162.0	582.5	579.4	685.3	140.7	31.9	667.5
All classes	10,238.0	180.0	316.0	683.9	2,570.3	2,275.2	2,577.2	372.3	65.6	1,197.5

Table 8.--Area of commercial forest land by forest type, stand-size class, and ownership class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Jack pine										
Sawtimber	93.9	5.2	4.3	3.5	20.0	4.0	9.1	14.5	4.2	29.1
Poletimber	281.0	44.6	8.9	12.1	73.4	1.6	35.0	21.2	6.5	77.7
Sapling & seedling	171.6	0.5	11.4	17.8	43.8	--	25.0	8.9	10.2	54.0
All stands	546.5	50.3	24.6	33.4	137.2	5.6	69.1	44.6	20.9	160.8
Red pine										
Sawtimber	159.2	70.6	2.1	14.6	18.2	5.4	5.4	9.8	5.9	27.2
Poletimber	193.9	9.3	--	10.9	39.2	3.5	13.6	23.5	17.3	76.6
Sapling & seedling	125.1	23.5	6.9	3.6	23.4	--	30.7	1.9	7.2	27.9
All stands	478.2	103.4	9.0	29.1	80.8	8.9	49.7	35.2	30.4	131.7
White pine										
Sawtimber	157.6	15.2	2.2	4.0	20.5	15.6	11.8	37.2	9.7	41.4
Poletimber	43.9	--	2.2	3.4	1.7	1.8	1.7	5.0	5.3	22.8
Sapling & seedling	24.1	--	2.5	2.2	2.2	--	3.4	6.8	--	7.0
All stands	225.6	15.2	6.9	9.6	24.4	17.4	16.9	49.0	15.0	71.2
Balsam fir										
Sawtimber	116.9	20.9	--	5.4	19.9	2.0	15.9	11.2	2.3	39.3
Poletimber	184.4	38.6	--	10.9	35.2	2.1	10.6	5.8	9.0	72.2
Sapling & seedling	118.1	6.5	--	5.4	16.5	--	15.6	18.6	5.5	50.0
All stands	419.4	66.0	--	21.7	71.6	4.1	42.1	35.6	16.8	161.5
White spruce										
Sawtimber	23.0	19.3	--	--	--	--	2.0	--	--	1.7
Poletimber	20.2	8.7	--	--	--	--	1.7	--	2.1	7.7
Sapling & seedling	18.2	3.2	--	1.7	1.8	--	2.0	--	--	9.5
All stands	61.4	31.2	--	1.7	1.8	--	5.7	--	2.1	18.9
Black spruce										
Sawtimber	7.3	--	--	1.7	3.8	--	--	--	--	1.8
Poletimber	82.0	15.7	--	8.4	18.2	3.6	10.6	2.0	--	23.5
Sapling & seedling	183.7	20.8	2.2	18.0	36.9	--	27.7	17.2	5.3	55.6
All stands	273.0	36.5	2.2	28.1	58.9	3.6	38.3	19.2	5.3	80.9
Northern white-cedar										
Sawtimber	115.3	9.0	--	13.5	17.7	5.3	21.6	7.8	4.4	36.0
Poletimber	206.9	52.9	--	5.4	21.3	10.8	12.9	33.2	5.8	64.6
Sapling & seedling	48.5	3.7	--	--	7.2	1.7	3.5	16.7	1.8	13.9
All stands	370.7	65.6	--	18.9	46.2	17.8	38.0	57.7	12.0	114.5

(Table 8 continued on next page)

(Table 8 continued)

Forest type and stand-size class	All owners	Ownership class: National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Tamarack										
Sawtimber	15.3	--	--	2.1	--	--	3.7	4.0	1.8	3.7
Poletimber	89.0	15.5	--	5.4	10.2	--	5.4	11.1	1.7	39.7
Sapling & seedling	118.4	1.4	--	14.7	11.3	1.6	7.1	26.3	10.2	45.8
All stands	222.7	16.9	--	22.2	21.5	1.6	16.2	41.4	13.7	89.2
Oak-hickory										
Sawtimber	1,526.5	--	8.8	31.6	29.5	17.9	14.5	877.8	80.6	465.8
Poletimber	841.8	42.9	22.4	19.9	127.4	3.4	17.2	266.8	44.7	297.1
Sapling & seedling	490.4	2.3	15.4	17.4	67.6	1.8	46.4	118.0	21.3	200.2
All stands	2,858.7	45.2	46.6	68.9	224.5	23.1	78.1	1,262.6	146.6	963.1
Elm-ash-soft maple										
Sawtimber	415.4	1.8	19.3	23.7	50.6	9.2	24.4	142.1	21.8	122.5
Poletimber	524.8	19.8	5.6	18.4	87.8	3.9	40.1	135.2	16.1	197.9
Sapling & seedling	300.4	3.7	2.8	18.2	31.2	1.8	22.3	80.3	21.3	118.8
All stands	1,240.6	25.3	27.7	60.3	169.6	14.9	86.8	357.6	59.2	439.2
Maple-birch										
Sawtimber	1,543.8	112.0	5.2	51.4	114.2	120.1	193.9	449.0	62.0	436.0
Poletimber	1,749.4	316.3	--	36.7	271.6	41.0	195.9	251.4	79.7	556.8
Sapling & seedling	703.7	3.8	2.2	21.8	81.3	3.4	50.8	257.7	13.7	269.0
All stands	3,996.9	432.1	7.4	109.9	467.1	164.5	440.6	958.1	155.4	1,261.8
Aspen										
Sawtimber	401.6	14.5	6.4	20.1	62.2	14.8	27.0	84.2	14.6	157.8
Poletimber	1,585.9	149.3	17.6	50.5	358.4	49.4	88.3	231.5	74.1	566.8
Sapling & seedling	1,274.0	152.1	16.2	69.4	323.2	18.8	107.1	157.3	55.9	374.0
All stands	3,261.5	315.9	40.2	140.0	743.8	83.0	222.4	473.0	144.6	1,098.6
Paper birch										
Sawtimber	78.9	0.6	--	1.6	6.2	--	1.9	28.5	1.7	38.4
Poletimber	420.2	32.8	3.8	16.9	82.2	5.4	35.9	63.3	34.5	145.4
Sapling & seedling	142.5	5.3	2.3	1.8	27.7	--	1.8	51.4	2.4	49.8
All stands	641.6	38.7	6.1	20.3	116.1	5.4	39.6	143.2	38.6	233.6
Exotic										
Sawtimber	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	--	--	--	--	--	2.2
All stands	2.2	--	--	--	--	--	--	--	--	2.2
Nonstocked	160.4	--	5.5	5.3	16.3	3.8	12.5	36.5	5.3	75.2
All types										
Sawtimber	4,654.7	269.1	48.3	173.2	362.8	194.3	331.2	1,666.1	209.0	1,400.7
Poletimber	6,223.4	746.4	60.5	198.9	1,126.6	126.5	468.9	1,050.0	296.8	2,148.8
Sapling & seedling	3,720.9	226.8	61.9	192.0	674.1	29.1	343.4	761.1	154.8	1,277.7
Nonstocked	160.4	--	5.5	5.3	16.3	3.8	12.5	36.5	5.3	75.2
All stands	14,759.4	1,242.3	176.2	569.4	2,179.8	353.7	1,156.0	3,513.7	665.9	4,902.4

Table 9.--Area of commercial forest land by forest type and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Forest type	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Jack pine	546.5	81.7	247.8	203.1	11.2	2.7
Red pine	478.2	157.8	132.6	135.5	40.1	12.2
White pine	225.6	81.1	36.5	77.9	13.7	16.4
Balsam fir	419.4	187.9	219.6	11.9	--	--
White spruce	61.4	19.8	31.9	2.2	2.5	5.0
Black spruce	273.0	147.5	111.2	11.6	--	2.7
Northern white-cedar	370.7	186.0	107.8	23.3	--	53.6
Tamarack	222.7	63.0	111.5	39.0	--	9.2
Oak-hickory	2,858.7	149.3	415.6	937.6	1,063.4	292.8
Elm-ash-soft maple	1,240.6	235.9	414.9	271.5	117.8	200.5
Maple-birch	3,996.9	1,280.2	1,478.7	506.2	497.9	233.9
Aspen	3,261.5	1,026.7	1,508.3	577.5	85.7	63.3
Paper birch	641.6	191.5	268.8	118.6	54.4	8.3
Exotic	2.2	--	--	2.2	--	--
Nonstocked	160.4	20.1	65.6	32.8	33.3	8.6
All types	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2

Table 10.--Area of commercial forest land by county, stand-size class, and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

County	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
NORTHEAST UNIT					
Florence	244.0	83.3	111.9	45.2	3.6
Forest	492.7	149.7	258.4	84.6	--
Langlade	374.5	85.8	215.8	72.9	--
Lincoln	393.8	61.1	195.8	135.0	1.9
Menominee	213.1	145.0	54.0	12.3	1.8
Marinette	639.7	136.0	309.5	192.4	1.8
Oconto	347.1	84.5	184.9	72.1	5.6
Oneida	497.1	93.9	211.3	188.5	3.4
Shawano	255.2	98.0	115.9	39.3	2.0
Vilas	371.3	115.5	166.8	89.0	--
All counties	3,828.5	1,052.8	1,824.3	931.3	20.1
NORTHWEST UNIT					
Ashland	503.8	135.9	263.6	104.3	--
Barron	158.7	57.5	64.4	34.5	2.3
Bayfield	740.5	144.0	407.2	187.5	1.8
Burnett	317.1	74.5	133.3	101.7	7.6
Douglas	627.9	106.5	301.7	210.3	9.4
Iron	377.9	108.5	192.0	77.4	--
Polk	220.8	64.7	98.4	57.7	--
Price	550.8	97.9	256.6	183.8	12.5
Rusk	363.1	103.0	192.4	63.7	4.0
Sawyer	607.7	162.1	312.9	117.2	15.5
Taylor	354.4	52.0	179.4	112.2	10.8
Washburn	328.1	45.9	183.6	96.9	1.7
All counties	5,150.8	1,152.5	2,585.5	1,347.2	65.6
CENTRAL UNIT					
Adams	234.3	47.2	82.1	100.2	4.8
Chippewa	225.7	66.0	84.1	68.1	7.5
Clark	316.1	71.1	129.1	113.5	2.4
Eau Clarie	154.5	35.7	90.5	28.3	--
Jackson	371.4	92.3	155.8	123.3	--
Juneau	252.1	81.8	105.7	64.6	--
Marathon	358.5	114.5	143.5	93.6	6.9
Marquette	94.3	38.1	22.6	31.4	2.2
Monroe	245.0	99.5	88.8	52.1	4.6
Portage	174.3	50.3	65.6	56.2	2.2
Waupaca	172.6	95.6	51.3	25.7	--
Waushara	145.6	38.1	64.8	40.5	2.2
Wood	206.5	52.3	68.2	86.0	--
All counties	2,950.9	882.5	1,152.1	883.5	32.8

(Table 10 continued on next page)

(Table 10 continued)

County	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
SOUTHWEST UNIT					
Buffalo	187.9	127.1	38.5	19.5	2.8
Crawford	167.8	98.0	30.7	33.5	5.6
Dunn	170.0	75.9	57.6	36.5	--
Grant	184.5	133.2	30.1	21.2	--
Iowa	136.0	65.5	38.1	29.7	2.7
La Crosse	121.6	86.0	19.9	15.7	--
Lafayette	37.6	23.5	2.4	11.7	--
Pepin	53.4	30.9	11.2	11.3	--
Pierce	100.6	46.7	21.8	26.9	5.2
Richland	158.7	75.1	36.2	47.4	--
St. Croix	72.9	11.2	31.4	21.7	8.6
Sauk	181.7	74.5	42.4	62.3	2.5
Trempealeau	147.0	76.2	36.6	31.5	2.7
Vernon	200.3	150.6	25.0	21.5	3.2
All counties	1,920.0	1,074.4	421.9	390.4	33.3
SOUTHEAST UNIT					
Brown	47.4	27.4	10.0	10.0	--
Calumet	24.7	9.9	9.9	4.9	--
Columbia	84.2	37.1	29.8	17.3	--
Dane	90.2	73.8	11.0	5.4	--
Dodge	27.6	16.0	4.6	7.0	--
Door	106.3	37.9	30.1	35.5	2.8
Fond du Lac	33.9	21.2	4.2	8.5	--
Green	30.9	26.1	4.8	--	--
Green Lake	21.0	9.4	11.6	--	--
Jefferson	29.0	23.8	2.6	2.6	--
Kenosha	10.8	5.4	5.4	--	--
Kewaunee	36.8	23.7	13.1	--	--
Manitowoc	56.5	32.4	16.1	8.0	--
Outagamie	70.7	27.9	25.0	15.3	2.5
Ozaukee	16.3	3.2	6.6	6.5	--
Racine	16.9	6.8	--	10.1	--
Rock	26.9	19.5	4.9	2.5	--
Sheboygan	51.5	13.6	24.5	13.4	--
Walworth	35.6	35.6	--	--	--
Washington	45.7	12.9	19.6	9.9	3.3
Waukesha	32.1	20.3	3.0	8.8	--
Winnebago	14.2	8.6	2.8	2.8	--
All counties	909.2	492.5	239.6	168.5	8.6
State total	14,759.4	4,654.7	6,223.4	3,720.9	160.4

Table 11.--Area of commercial forest land by forest type, stand-size class, and site class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
Jack pine							
Sawtimber	93.9	--	--	--	7.0	51.7	35.2
Poletimber	281.0	--	--	--	20.6	153.1	107.3
Sapling & seedling	171.6	--	--	1.9	9.8	69.9	90.0
All stands	546.5	--	--	1.9	37.4	274.7	232.5
Red pine							
Sawtimber	159.2	--	--	45.5	69.6	39.9	4.2
Poletimber	193.9	--	4.4	72.1	102.8	13.0	1.6
Sapling & seedling	125.1	--	--	12.3	42.8	55.1	14.9
All stands	478.2	--	4.4	129.9	215.2	108.0	20.7
White pine							
Sawtimber	157.6	--	--	25.4	66.7	43.9	21.6
Poletimber	43.9	--	--	13.6	10.7	11.8	7.8
Sapling & seedling	24.1	--	--	1.8	11.4	10.9	--
All stands	225.6	--	--	40.8	88.8	66.6	29.4
Balsam fir							
Sawtimber	116.9	--	--	52.5	35.7	19.8	8.9
Poletimber	184.4	--	--	50.9	73.1	38.1	22.3
Sapling & seedling	118.1	--	2.0	31.1	37.2	22.8	25.0
All stands	419.4	--	2.0	134.5	146.0	80.7	56.2
White spruce							
Sawtimber	23.0	--	--	--	16.4	6.6	--
Poletimber	20.2	--	--	--	10.9	9.3	--
Sapling & seedling	18.2	--	--	--	3.8	6.1	8.3
All stands	61.4	--	--	--	31.1	22.0	8.3
Black spruce							
Sawtimber	7.3	--	--	--	--	1.8	5.5
Poletimber	82.0	--	--	--	6.8	9.6	65.6
Sapling & seedling	183.7	--	--	--	8.2	12.2	163.3
All stands	273.0	--	--	--	15.0	23.6	234.4
Northern white-cedar							
Sawtimber	115.3	--	--	--	4.6	32.7	78.0
Poletimber	206.9	--	--	--	--	48.4	158.5
Sapling & seedling	48.5	--	--	--	--	9.7	38.8
All stands	370.7	--	--	--	4.6	90.8	275.3

(Table 11 continued on next page)

(Table 11 continued)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
Tamarack							
Sawtimber	15.3	--	--	--	1.9	5.7	7.7
Poletimber	89.0	--	--	--	4.1	43.7	41.2
Sapling & seedling	118.4	--	--	--	4.1	44.3	70.0
All stands	222.7	--	--	--	10.1	93.7	118.9
Oak-hickory							
Sawtimber	1,526.5	--	--	10.0	294.8	745.5	476.2
Poletimber	841.8	--	--	--	137.4	473.0	231.4
Sapling & seedling	490.4	--	--	2.5	74.0	234.3	179.6
All stands	2,858.7	--	--	12.5	506.2	1,452.8	887.2
Elm-ash-soft maple							
Sawtimber	415.4	--	--	--	52.4	121.8	241.2
Poletimber	524.8	--	--	--	56.8	137.9	330.1
Sapling & seedling	300.4	--	--	--	13.4	74.2	212.8
All stands	1,240.6	--	--	--	122.6	333.9	784.1
Maple-birch							
Sawtimber	1,543.8	--	--	16.5	266.2	792.7	468.4
Poletimber	1,749.4	--	--	18.9	342.8	941.2	446.5
Sapling & seedling	703.7	--	--	16.0	100.9	318.7	268.1
All stands	3,996.9	--	--	51.4	709.9	2,052.6	1,183.0
Aspen							
Sawtimber	401.6	--	--	19.0	192.6	169.3	20.7
Poletimber	1,585.9	--	--	35.6	686.2	744.4	119.7
Sapling & seedling	1,274.0	--	--	16.7	415.3	634.8	207.2
All stands	3,261.5	--	--	71.3	1,294.1	1,548.5	347.6
Paper birch							
Sawtimber	78.9	--	--	5.1	15.0	31.6	27.2
Poletimber	420.2	--	--	5.2	34.0	212.2	168.8
Sapling & seedling	142.5	--	--	--	17.6	53.2	71.7
All stands	641.6	--	--	10.3	66.6	297.0	267.7
Exotic							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	2.2	--	--
All stands	2.2	--	--	--	2.2	--	--
Nonstocked	160.4	--	--	1.7	15.8	61.1	81.8
All types							
Sawtimber	4,654.7	--	--	174.0	1,022.9	2,063.0	1,394.8
Poletimber	6,223.4	--	4.4	196.3	1,486.2	2,835.7	1,700.8
Sapling & seedling	3,720.9	--	2.0	82.3	740.7	1,546.2	1,349.7
Nonstocked	160.4	--	--	1.7	15.8	61.1	81.8
All stands	14,759.4	--	6.4	454.3	3,265.6	6,506.0	4,527.1

Table 12.--Area of commercial forest land by forest type and stand-age class, Wisconsin, 1983

(In thousand acres)

Forest type	All ages	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	546.5	34.2	98.6	73.7	116.9	145.2	57.4	9.4	9.2	1.9	--	--	--	--
Red pine	478.2	53.9	104.4	108.3	97.3	54.6	23.9	7.3	7.8	7.0	10.5	3.2	--	--
White pine	225.6	12.6	18.6	10.8	18.3	22.5	22.3	24.7	30.6	31.0	4.3	10.1	8.1	11.7
White spruce	419.4	48.9	30.7	44.6	48.4	49.5	100.8	51.6	14.1	12.9	3.5	7.5	5.0	1.9
Balsam fir	61.4	7.1	12.7	10.7	13.9	6.5	8.5	2.0	--	--	--	--	--	--
Black spruce	273.0	29.1	41.9	71.1	35.7	27.6	14.3	14.3	24.7	8.8	3.6	--	1.9	--
Northern white-cedar	370.7	9.8	14.5	18.4	7.7	47.9	33.0	38.6	29.8	37.7	57.8	30.8	21.5	23.2
Tamarack	222.7	20.7	50.4	40.2	13.6	21.5	17.1	19.4	15.8	14.9	1.7	3.8	1.8	1.8
Oak-hickory	2,858.7	297.3	149.0	98.2	123.6	337.6	423.5	274.8	283.1	223.8	203.0	208.9	145.8	90.1
Elm-ash-soft maple	1240.6	132.0	117.9	86.0	118.9	160.6	123.6	133.1	129.7	89.2	59.9	50.2	28.7	10.8
Maple-birch	3,996.9	304.0	273.6	232.7	258.1	612.3	681.9	479.6	241.5	239.1	201.9	215.9	128.0	128.3
Aspen	3,261.5	651.3	451.0	312.4	471.1	702.5	404.9	154.2	71.6	37.4	5.1	--	--	--
Paper birch	641.6	56.9	53.5	59.5	95.3	148.7	130.4	76.0	15.3	1.9	0.3	3.8	--	--
Exotic	2.2	--	2.2	--	--	--	--	--	--	--	--	--	--	--
Nonstocked	160.4	160.4	--	--	--	--	--	--	--	--	--	--	--	--
All types	14,759.4	1,818.2	1,419.0	1,166.6	1,418.8	2,337.0	2,041.6	1,285.0	873.2	705.6	551.6	534.2	340.8	267.8

Table 13.--Area of commercial forest land by forest type, site-index class, and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

ALL UNITS

Forest type	All classes	Site-index class (feet)								
		11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Jack pine	546.5	--	1.7	8.2	72.8	174.3	202.9	74.2	10.5	1.9
Red pine	478.2	--	--	8.6	7.6	78.9	161.8	154.3	62.6	4.4
White pine	225.6	--	--	6.4	25.7	61.7	71.1	35.0	23.1	2.6
Balsam fir	419.4	3.2	7.0	46.0	111.7	115.0	103.6	22.1	8.8	2.0
White spruce	61.4	--	--	2.8	11.8	12.1	10.7	24.0	--	--
Black spruce	273.0	--	72.1	96.2	66.1	23.6	11.6	3.4	--	--
Northern white-cedar	370.7	6.9	116.2	97.6	73.8	42.5	29.1	2.7	1.9	--
Tamarack	222.7	--	20.0	46.3	52.6	51.4	42.3	6.0	4.1	--
Oak-hickory	2,858.7	--	--	127.3	392.2	795.2	745.1	513.4	221.8	63.7
Elm-ash-soft maple	1,240.6	--	7.2	75.8	192.2	355.4	300.8	186.6	101.6	21.0
Maple-birch	3,996.9	--	--	40.0	252.2	890.8	1,316.4	994.1	416.3	87.1
Aspen	3,261.5	--	--	19.1	162.4	502.5	955.1	1,099.1	452.0	71.3
Paper birch	641.6	--	--	8.0	48.9	153.0	213.5	141.3	66.6	10.3
Exotic	2.2	--	--	--	--	--	--	2.2	--	--
Nonstocked	160.4	--	3.8	17.4	28.0	46.8	31.2	25.8	4.7	2.7
All types	14,759.4	10.1	228.0	599.7	1,498.0	3,303.2	4,195.2	3,284.2	1,374.0	267.0
NORTHEAST UNIT										
Jack pine	81.7	--	1.7	1.6	8.8	23.0	25.7	17.5	3.4	--
Red pine	157.8	--	--	--	3.6	29.3	53.7	51.3	19.9	--
White pine	81.1	--	--	1.7	10.3	19.6	26.7	12.2	10.6	--
Balsam fir	187.9	--	5.3	27.3	44.2	50.4	47.7	11.0	2.0	--
White spruce	19.8	--	--	--	5.4	8.3	--	6.1	--	--
Black spruce	147.5	--	38.3	46.6	37.2	15.2	6.8	3.4	--	--
Northern white-cedar	186.0	3.4	65.9	58.2	24.9	22.7	9.0	--	1.9	--
Tamarack	63.0	--	7.1	18.1	10.8	25.3	1.7	--	--	--
Oak-hickory	149.3	--	--	--	5.3	34.0	39.2	41.7	23.4	5.7
Elm-ash-soft maple	235.9	--	--	24.1	39.5	77.1	58.3	18.6	18.3	--
Maple-birch	1,280.2	--	--	11.3	73.3	255.9	446.1	362.1	114.6	16.9
Aspen	1,026.7	--	--	9.3	58.2	178.7	305.0	343.3	119.5	12.7
Paper birch	191.5	--	--	--	12.5	44.4	77.2	50.0	7.4	--
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	20.1	--	2.0	1.8	5.4	5.6	1.9	3.4	--	--
All types	3,828.5	3.4	120.3	200.0	339.4	789.5	1,099.0	920.6	321.0	35.3
NORTHWEST UNIT										
Jack pine	247.8	--	--	1.9	36.9	76.8	104.6	21.0	4.7	1.9
Red pine	132.6	--	--	1.8	1.8	30.3	57.1	33.3	8.3	--
White pine	36.5	--	--	--	3.7	20.3	9.1	--	3.4	--
Balsam fir	219.6	3.2	1.7	18.7	60.4	62.2	53.5	11.1	6.8	2.0
White spruce	31.9	--	--	--	1.7	3.8	10.7	15.7	--	--
Black spruce	111.2	--	33.8	47.2	21.6	3.8	4.8	--	--	--
Northern white-cedar	107.8	3.5	32.8	13.9	36.3	8.5	12.8	--	--	--
Tamarack	111.5	--	12.9	23.7	30.6	14.5	24.5	3.6	1.7	--
Oak-hickory	415.6	--	--	12.6	41.6	136.3	115.7	92.0	17.4	--
Elm-ash-soft maple	414.9	--	1.8	33.1	99.5	140.0	75.2	43.8	21.5	--
Maple-birch	1,478.7	--	--	12.5	88.4	346.4	528.9	356.8	129.4	16.3
Aspen	1,508.3	--	--	4.3	54.1	190.3	437.7	550.0	247.1	24.8
Paper birch	268.8	--	--	5.7	20.2	69.5	91.3	52.3	27.9	1.9
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	65.6	--	1.8	5.6	14.5	18.5	14.4	8.9	1.9	--
All types	5,150.8	6.7	84.8	181.0	511.3	1,121.2	1,540.3	1,188.5	470.1	46.9

(Table 13 continued on next page)

Table 13 continued)

CENTRAL UNIT

Forest type	All classes	Site-index class (feet) 11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Jack pine	203.1	--	--	4.7	24.6	63.1	72.6	35.7	2.4	--
Red pine	135.5	--	--	6.8	2.2	19.3	35.9	46.3	20.6	4.4
White pine	77.9	--	--	2.3	11.7	16.4	27.2	13.6	6.7	--
Balsam fir	11.9	--	--	--	7.1	2.4	2.4	--	--	--
White spruce	2.2	--	--	--	2.2	--	--	--	--	--
Black spruce	11.6	--	--	2.4	4.6	4.6	--	--	--	--
Northern white-cedar	23.3	--	6.9	9.4	4.6	--	2.4	--	--	--
Tamarack	39.0	--	--	4.5	11.2	11.6	6.9	2.4	2.4	--
Oak-hickory	937.6	--	--	54.6	131.8	277.5	267.5	123.7	71.3	11.2
Elm-ash-soft maple	271.5	--	--	2.2	23.2	78.8	94.3	47.3	25.7	--
Maple-birch	506.2	--	--	4.8	26.7	118.2	176.1	106.3	60.2	13.9
Aspen	577.5	--	--	--	35.2	122.8	188.2	147.2	60.8	23.3
Paper birch	118.6	--	--	2.3	13.7	25.3	28.7	25.5	20.8	2.3
Exotic	2.2	--	--	--	--	--	--	2.2	--	--
Nonstocked	32.8	--	--	4.5	2.3	11.9	9.2	4.9	--	--
All types	2,950.9	--	6.9	98.5	301.1	751.9	911.4	555.1	270.9	55.1

SOUTHWEST UNIT

Jack pine	11.2	--	--	--	2.5	8.7	--	--	--	--
Red pine	40.1	--	--	--	--	--	12.9	13.4	13.8	--
White pine	13.7	--	--	--	--	2.6	5.9	2.6	--	2.6
Balsam fir	--	--	--	--	--	--	--	--	--	--
White spruce	2.5	--	--	--	2.5	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--
Oak-hickory	1,063.4	--	--	35.6	148.7	272.0	257.9	217.5	89.9	41.8
Elm-ash-soft maple	117.8	--	--	5.3	5.6	25.1	37.1	22.8	13.2	8.7
Maple-birch	497.9	--	--	8.9	51.4	113.5	104.1	116.6	81.1	22.3
Aspen	85.7	--	--	2.7	11.5	2.8	8.2	33.1	19.4	8.0
Paper birch	54.4	--	--	--	--	13.8	10.5	13.5	10.5	6.1
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	33.3	--	--	5.5	2.5	5.5	5.7	8.6	2.8	2.7
All types	1,920.0	--	--	58.0	224.7	444.0	442.3	428.1	230.7	92.2

SOUTHEAST UNIT

Jack pine	2.7	--	--	--	--	2.7	--	--	--	--
Red pine	12.2	--	--	--	--	--	2.2	10.0	--	--
White pine	16.4	--	--	2.4	--	2.8	2.2	6.6	2.4	—
Balsam fir	--	--	--	--	--	--	--	--	--	--
White spruce	5.0	--	--	2.8	--	--	--	2.2	--	--
Black spruce	2.7	--	--	--	2.7	--	--	--	--	--
Northern white-cedar	53.6	--	10.6	16.1	8.0	11.3	4.9	2.7	--	--
Tamarack	9.2	--	--	--	--	--	9.2	--	--	--
Oak-hickroy	292.8	--	--	24.5	64.8	75.4	64.8	38.5	19.8	5.0
Elm-ash-soft maple	200.5	--	5.4	11.1	24.4	34.4	35.9	54.1	22.9	12.3
Maple-birch	233.9	--	--	2.5	12.4	56.8	61.2	52.3	31.0	17.7
Aspen	63.3	--	--	2.8	3.4	7.9	16.0	25.5	5.2	2.5
Paper birch	8.3	--	--	--	2.5	--	5.8	--	--	--
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	8.6	--	--	--	3.3	5.3	--	--	--	--
All types	909.2	--	16.0	62.2	121.5	196.6	202.2	191.9	81.3	37.5

Table 14.--Area of commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	93.9	--	--	--	7.9	3.6	9.8	9.5	12.8	16.1	8.0	17.2	7.2	1.8	--
Poletimber	281.0	--	--	--	4.2	10.0	22.4	22.6	51.1	44.7	64.9	38.5	18.5	1.9	2.2
Sapling & seedling	171.6	21.0	6.8	24.7	16.7	20.4	16.1	20.6	39.7	3.8	1.8	--	--	--	--
All stands	546.5	21.0	6.8	24.7	28.8	34.0	48.3	52.7	103.6	64.6	74.7	55.7	25.7	3.7	2.2
Red pine															
Sawtimber	159.2	--	--	--	2.8	2.0	1.9	--	7.3	9.4	11.4	46.8	43.4	27.0	7.2
Poletimber	193.9	--	--	--	--	3.4	6.1	6.5	8.5	19.9	6.8	42.3	42.0	22.4	36.0
Sapling & seedling	125.1	55.5	10.7	8.6	6.0	4.6	15.8	--	5.7	9.9	1.6	4.2	2.5	--	--
All stands	478.2	55.5	10.7	8.6	8.8	10.0	23.8	6.5	21.5	39.2	19.8	93.3	87.9	49.4	43.2
White pine															
Sawtimber	157.6	--	2.5	1.9	7.6	1.7	7.6	1.7	8.8	13.5	11.9	41.2	33.5	16.8	8.9
Poletimber	43.9	--	--	--	--	1.7	2.2	--	5.2	6.0	5.8	13.0	5.4	4.6	--
Sapling & seedling	24.1	5.4	5.1	--	--	2.2	5.7	--	5.7	--	--	--	--	--	--
All stands	225.6	5.4	7.6	1.9	7.6	5.6	15.5	1.7	19.7	19.5	17.7	54.2	38.9	21.4	8.9
Balsam fir															
Sawtimber	116.9	--	--	--	--	8.2	19.7	5.5	10.0	7.3	8.5	21.6	26.8	3.7	5.6
Poletimber	184.4	--	--	1.8	--	3.5	14.6	12.1	7.5	18.7	7.3	36.6	47.8	22.0	12.5
Sapling & seedling	118.1	11.0	10.6	13.7	7.3	13.2	13.8	17.1	17.0	1.9	5.6	3.3	1.9	1.7	--
All stands	419.4	11.0	10.6	15.5	7.3	24.9	48.1	34.7	34.5	27.9	21.4	61.5	76.5	27.4	18.1
White spruce															
Sawtimber	23.0	--	--	--	--	--	--	2.7	--	--	--	--	--	10.3	10.0
Poletimber	20.2	--	--	--	--	--	--	--	--	3.8	2.2	1.7	8.7	3.8	--
Sapling & seedling	18.2	4.2	2.8	1.8	--	3.6	3.6	--	2.2	--	--	--	--	--	--
All stands	61.4	4.2	2.8	1.8	--	3.6	3.6	2.7	2.2	3.8	2.2	1.7	8.7	14.1	10.0
Black spruce															
Sawtimber	7.3	--	1.9	--	--	--	--	3.6	--	--	--	--	1.8	--	--
Poletimber	82.0	--	--	3.6	--	--	9.3	7.5	13.0	8.7	17.5	7.8	12.8	1.8	--
Sapling & seedling	183.7	11.3	11.1	35.7	9.2	40.5	12.7	18.1	20.4	10.8	3.7	5.9	4.3	--	--
All stands	273.0	11.3	13.0	39.3	9.2	40.5	22.0	29.2	33.4	19.5	21.2	13.7	18.9	1.8	--
Northern white-cedar															
Sawtimber	115.3	--	--	--	--	5.3	2.0	5.3	8.6	7.5	3.5	7.6	24.9	24.9	25.7
Poletimber	206.9	--	--	--	--	--	1.8	--	8.9	11.4	1.6	43.1	30.1	61.0	49.0
Sapling & seedling	48.5	1.8	2.9	7.0	2.7	5.3	3.5	--	8.4	2.7	--	8.9	--	5.3	--
All stands	370.7	1.8	2.9	7.0	2.7	10.6	7.3	5.3	25.9	21.6	5.1	59.6	55.0	91.2	74.7

(Table 14 continued on next page)

(Table 14 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	15.3	--	1.8	4.3	--	1.8	3.7	1.8	--	--	--	1.9	--	--	--
Poletimber	89.0	--	1.9	3.7	2.4	11.5	11.1	15.1	1.9	21.7	8.6	9.3	1.8	--	--
Sapling & seedling	118.4	24.3	11.8	13.4	12.6	15.7	16.6	5.8	11.0	1.8	5.4	--	--	--	--
All stands	222.7	24.3	15.5	21.4	15.0	29.0	31.4	22.7	12.9	23.5	14.0	11.2	1.8	--	--
Oak-hickory															
Sawtimber	1,526.5	--	2.4	15.4	26.8	65.4	86.5	114.3	169.7	214.5	144.2	371.4	247.7	59.3	8.9
Poletimber	841.8	--	--	3.5	7.6	8.6	77.6	47.2	100.4	122.9	109.6	178.3	134.3	46.7	5.1
Sapling & seedling	490.4	52.0	48.1	89.5	60.4	73.3	74.9	26.8	18.9	17.0	11.0	13.1	5.4	--	--
All stands	2,858.7	52.0	50.5	108.4	94.8	147.3	239.0	188.3	289.0	354.4	264.8	562.8	387.4	106.0	14.0
Elm-ash-soft maple															
Sawtimber	415.4	--	4.7	15.0	18.2	20.9	38.6	16.4	30.5	43.9	37.6	71.9	74.6	33.0	10.1
Poletimber	524.8	--	10.1	21.9	23.3	36.1	50.2	37.1	67.6	66.3	37.6	64.5	77.6	28.1	4.4
Sapling & seedling	300.4	31.8	44.3	39.3	42.5	40.0	40.6	17.5	16.7	11.7	9.1	2.4	4.5	--	--
All stands	1,240.6	31.8	59.1	76.2	84.0	97.0	129.4	71.0	114.8	121.9	84.3	138.8	156.7	61.1	14.5
Maple-birch															
Sawtimber	1,543.8	--	--	8.9	7.7	44.9	66.5	61.5	137.2	148.3	128.5	336.0	417.8	151.0	35.5
Poletimber	1,749.4	--	--	4.9	19.0	37.8	77.1	81.6	156.5	244.9	155.2	422.7	386.7	140.1	22.9
Sapling & seedling	703.7	49.5	83.2	87.2	62.5	96.2	91.5	49.8	54.5	46.8	19.6	46.1	11.2	5.6	--
All stands	3,996.9	49.5	83.2	101.0	89.2	178.9	235.1	192.9	348.2	440.0	303.3	804.8	815.7	296.7	58.4
Aspen															
Sawtimber	401.6	--	2.3	7.3	13.1	19.7	33.9	22.7	33.5	56.0	35.1	64.7	88.4	15.4	9.5
Poletimber	1,585.9	--	9.1	29.5	30.7	102.0	142.0	147.7	170.5	227.5	147.6	250.4	241.0	71.4	16.5
Sapling & seedling	1,274.0	176.5	191.2	174.1	142.6	193.0	139.3	82.7	84.6	49.2	20.1	17.1	1.8	1.8	--
All stands	3,261.5	176.5	202.6	210.9	186.4	314.7	315.2	253.1	288.6	332.7	202.8	332.2	331.2	88.6	26.0
Paper birch															
Sawtimber	78.9	--	--	1.8	--	5.6	2.6	10.1	8.7	11.5	3.6	14.5	12.2	5.5	2.8
Poletimber	420.2	--	--	1.9	7.8	18.2	35.2	13.4	35.9	33.6	36.1	82.7	112.2	37.7	5.5
Sapling & seedling	142.5	9.9	22.9	14.6	13.4	23.0	19.8	12.6	5.4	6.1	5.5	7.6	1.7	--	--
All stands	641.6	9.9	22.9	18.3	21.2	46.8	57.6	36.1	50.0	51.2	45.2	104.8	126.1	43.2	8.3
Exotic															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	--	--	--	--	2.2	--	--	--	--	--	--
All stands	2.2	--	--	--	--	--	--	--	2.2	--	--	--	--	--	--
Nonstocked	160.4	78.4	26.4	9.2	9.8	3.5	9.2	4.4	5.6	--	8.8	2.7	2.4	--	--
All types															
Sawtimber	4,654.7	--	15.6	54.6	84.1	179.1	272.8	255.1	427.1	528.0	392.3	994.8	978.3	348.7	124.2
Poletimber	6,223.4	--	21.1	70.8	95.0	232.8	449.6	390.8	627.0	830.1	600.8	1,190.9	1,118.9	441.5	154.1
Sapling & seedling	3,720.9	454.2	451.5	509.6	375.9	531.0	453.9	251.0	292.4	161.7	83.4	108.6	33.3	14.4	--
Nonstocked	160.4	78.4	26.4	9.2	9.8	3.5	9.2	4.4	5.6	--	8.8	2.7	2.4	--	--
All stands	14,759.4	532.6	514.6	644.2	564.8	946.4	1,185.5	901.3	1,352.1	1,519.8	1,085.3	2,297.0	2,132.9	804.6	278.3

Table 15.--Area of commercial forest land by stocking class of growing-stock trees and stand-size class, Wisconsin, 1983

(In thousand acres)

Stocking class (percent)	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Less than 16.7	160.4	--	--	--	160.4
16.7 to 60.9	2,633.4	1,027.2	806.1	800.1	--
61.0 to 100.9	6,087.2	1,971.3	2,837.9	1,278.0	--
101.0 to 133.9	4,829.8	1,401.9	2,243.6	1,184.3	--
134.0+	1,048.6	254.3	335.8	458.5	--
All classes	14,759.4	4,654.7	6,223.4	3,720.9	160.4

Table 16.--Area of commercial forest land by stocking class based on selected stand components, Wisconsin, 1983

(In thousand acres)

Stocking class (percent)	Stocking classified in terms of		
	All live trees	Growing-stock trees	Rough and rotten trees
0-10	30.6	54.0	7,344.6
11-20	55.7	155.8	3,762.8
21-30	138.9	357.2	1,873.4
31-40	237.0	487.8	960.1
41-50	364.5	666.2	459.9
51-60	433.2	960.0	208.8
61-70	652.8	1,278.3	103.2
71-80	945.2	1,384.8	17.6
81-90	1,309.4	1,638.1	20.9
91-100	1,824.2	1,758.5	2.1
101-110	1,951.2	1,698.5	4.1
111-120	2,130.5	1,607.3	1.9
121-130	1,954.9	1,328.1	--
131-140	1,454.7	759.0	--
141-150	885.0	413.2	--
151-160	304.4	159.1	--
161+	87.2	53.5	--
All classes	14,759.4	14,759.4	14,759.4

Table 17.--Area of noncommercial forest land by ownership class, Wisconsin, 1983

(In thousand acres)

Ownership class	All areas	Unproductive areas	Productive-reserved areas
National Forest	147.4	94.9	52.5[1/]
Miscellaneous federal	54.9	2.3	52.6
State	137.8	31.9	105.9
County and municipal	60.4	44.9	15.5
Indian	3.8	2.2	1.6
Forest industry	17.5	17.5	--
Farmer	59.8	52.5	7.3
Misc. private-corp.	14.2	5.4	8.8
Misc. private-indiv.	96.1	79.4	16.7
Total	591.9	331.0	260.9

[1/] Includes 33.8 thousand acres of productive-deferred areas.

Table 18.--Area of noncommercial forest land by forest type, Wisconsin, 1983

(In thousand acres)

Forest type	All areas	Unproductive areas	Productive reserved areas[1/]
Jack pine	4.6	2.0	2.6
Red pine	17.1	--	17.1
White pine	2.7	--	2.7
Balsam fir	14.9	14.0	.9
White spruce	1.8	--	1.8
Black spruce	190.5	183.6	6.9
Northern white-cedar	20.7	17.2	3.5
Tamarack	20.5	20.5	--
Oak-hickory	56.6	26.5	30.1
Elm-ash-soft maple	98.6	45.1	53.5
Maple-birch	60.9	2.5	58.4
Aspen	77.7	5.7	72.0
Paper birch	4.2	2.3	1.9
Exotic	9.5	--	9.5
Nonstocked	11.6	11.6	--
All types	591.9	331.0	260.9

[1/] Includes 33.8 thousand acres of productive-deferred areas.

Table 19.--Area of nonforest land with trees by forest type and land use, Wisconsin 1983

(In thousand acres)

Forest type	All uses	Land use							
		Cropland	Improved pasture	Wooded strips	Idle farmland	Marsh	Wind-breaks	Urban and other[1/]	Wooded pasture
Jack pine	14.2	--	4.7	--	4.4	5.1	--	--	--
Red pine	8.5	--	1.3	2.3	--	--	4.9	--	--
White pine	10.3	--	2.3	2.2	--	5.8	--	--	--
Balsam fir	7.3	--	--	--	--	7.3	--	--	--
White spruce	2.0	--	--	--	2.0	--	--	--	--
Black spruce	9.5	--	--	1.8	--	7.7	--	--	--
Northern white-cedar	1.2	--	1.2	--	--	--	--	--	--
Tamarack	30.6	--	--	--	4.2	26.4	--	--	--
Oak-hickory	213.9	16.4	103.2	12.4	21.0	8.4	15.7	--	36.8
Elm-ash-soft maple	269.1	9.2	67.7	9.4	21.7	140.8	4.2	--	16.1
Maple-birch	200.9	16.5	80.7	8.8	21.7	11.5	11.6	--	50.1
Aspen	165.2	6.9	39.2	8.1	33.4	68.0	4.4	--	5.2
Paper birch	28.6	--	--	--	--	24.7	--	--	3.9
Exotic	2.4	--	--	--	--	2.4	--	--	--
Nonstocked	33.7	5.1	22.0	--	2.1	4.5	--	--	--
Not typed	244.3	--	--	--	--	--	--	244.3	--
All types	1,241.7	54.1	322.3	45.0	110.5	312.6	40.8	244.3	112.1

[1/] Forest type was not recorded on plots classified as urban and other with trees.

Table 20.--Number of live trees on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Jack pine	311,595	123,859	69,778	62,827	34,711	13,911	5,063	1,153	273	17	3	--	--	--	--
Red pine	214,190	52,318	45,520	60,871	33,658	12,293	4,952	1,787	1,263	886	389	183	70	--	--
White pine	138,015	64,086	28,459	16,136	10,403	6,050	4,062	2,879	2,052	1,563	927	594	666	136	2
White spruce	76,618	31,166	15,424	13,324	8,968	4,241	1,961	900	402	149	38	29	16	--	--
Black spruce	266,698	158,252	73,318	26,515	6,802	1,463	281	35	29	3	--	--	--	--	--
Balsam fir	655,401	385,634	143,269	75,383	32,381	13,544	3,817	874	449	46	4	--	--	--	--
Hemlock	51,612	15,382	8,301	7,851	5,963	4,871	3,421	2,326	1,326	1,083	530	245	293	20	--
Tamarack	144,825	81,897	34,600	17,014	8,331	1,935	782	188	40	31	7	--	--	--	--
Eastern redcedar	13,203	9,703	1,356	1,657	311	120	30	11	15	--	--	--	--	--	--
Northern white-cedar	275,112	94,236	72,340	53,664	30,898	13,932	6,612	2,217	821	244	103	31	14	--	--
Other softwoods	5,471	2,892	1,362	767	228	88	110	--	24	--	--	--	--	--	--
Total	2,152,740	1,019,425	493,727	336,009	172,654	72,448	31,091	12,370	6,694	4,022	2,001	1,082	1,059	156	2
Hardwoods															
Select white oaks	249,444	121,579	39,698	27,015	19,640	13,617	10,530	6,851	4,517	2,535	1,436	911	868	227	20
Select red oaks	288,090	112,762	38,180	40,084	31,919	23,898	16,258	9,737	6,291	3,637	2,183	1,373	1,474	290	4
Other red oaks	304,275	158,646	38,141	35,873	26,335	17,800	11,483	6,936	4,375	2,166	1,099	625	705	87	4
Select hickory	61,982	37,168	8,242	5,721	4,460	3,051	1,864	842	423	145	47	10	9	--	--
Other hickory	71,599	40,512	15,329	10,016	3,619	992	832	199	71	20	6	--	3	--	--
Basswood	223,642	83,818	38,690	34,243	28,092	19,319	9,718	4,890	2,247	1,260	602	351	330	73	9
Beech	12,182	7,921	2,123	315	456	272	372	252	149	161	75	47	35	4	--
Yellow birch	114,505	47,286	29,906	15,500	8,721	5,849	3,118	1,820	982	687	291	156	159	30	--
Hard maple	927,657	486,342	209,468	113,997	58,603	27,024	13,424	7,696	4,693	2,846	1,595	861	944	159	5
Soft maple	1,171,319	661,160	277,909	128,717	57,500	24,799	10,375	5,224	2,608	1403	676	454	362	115	17
Elm	307,865	192,570	48,740	26,793	15,382	10,404	6,390	3,461	2,154	956	445	226	269	69	6
Black ash	329,952	180,411	73,398	41,430	19,747	9,158	3,703	1,214	604	184	61	27	15	--	--
White & green ash	167,004	109,033	19,520	13,883	9,568	7,205	4,000	2,007	1,049	422	141	45	116	15	--
Cottonwood	3,039	978	186	609	299	123	277	293	35	75	62	17	35	41	9
Willow	10,776	6,448	1,994	686	509	286	261	178	135	130	45	36	52	16	--
Hackberry	5,228	4,829	--	187	123	--	53	31	--	--	--	--	5	--	--
Balsam poplar	21,886	13,890	2,698	2,493	1,144	671	368	392	146	28	28	21	6	1	--
Bigtooth aspen	277,949	166,213	30,507	26,194	22,605	16,794	10,017	3,585	1,405	482	88	45	12	2	--
Quaking aspen	1,581,110	1,093,156	185,723	121,007	90,938	53,938	23,540	8,966	2,835	746	188	64	9	--	--
Paper birch	524,579	200,210	133,886	92,600	62,232	24,460	7,958	2,392	654	121	55	5	5	1	--
River birch	3,935	1,571	1,028	489	376	221	130	48	39	--	25	5	3	--	--
Black cherry	261,944	195,158	32,626	16,669	8,656	5,285	1,747	1,250	314	142	54	22	19	2	--
Black walnut	3,940	1,511	--	725	463	383	386	253	75	98	25	16	5	--	--
Butternut	12,942	5,947	1,034	1,292	2,162	847	742	443	315	90	41	14	13	2	--
Other hardwoods	51,932	31,357	10,613	5,089	2,360	981	753	453	179	90	28	4	23	2	--
Noncommercial sps.	614,303	490,493	95,481	21,956	4,910	1,003	406	47	7	--	--	--	--	--	--
Total	7,603,079	4,450,969	1,335,120	783,583	480,819	268,380	138,705	69,460	36,302	18,424	9,296	5,335	5,476	1,136	74
All species	9,755,819	5,470,394	1,828,847	1,119,592	653,473	340,828	169,796	81,830	42,996	22,446	11,297	6,417	6,535	1,292	76

Table 21.--Number of growing-stock trees on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Jack pine	298,425	121,756	67,822	57,422	32,913	12,910	4,562	858	171	8	3	--	--	--	--
Red pine	212,039	52,318	45,123	59,899	33,080	12,138	4,943	1,775	1,251	876	389	177	70	--	--
White pine	133,431	63,659	28,292	14,745	9,471	5,252	3,714	2,706	1,937	1,478	888	544	624	119	2
White spruce	75,451	31,166	15,074	13,283	8,420	4,108	1,901	883	388	145	38	29	16	--	--
Black spruce	262,568	156,790	71,760	25,670	6,592	1,417	272	35	29	3	--	--	--	--	--
Balsam fir	648,848	384,586	140,586	74,328	31,268	13,102	3,665	841	435	33	4	--	--	--	--
Hemlock	47,400	15,382	7,896	6,767	4,926	4,256	2,860	2,058	1,252	993	469	243	280	18	--
Tamarack	142,325	81,492	33,846	16,317	7,857	1,833	756	146	40	31	7	--	--	--	--
Eastern redcedar	10,643	8,321	774	1,350	129	43	--	11	15	--	--	--	--	--	--
Northern white-cedar	252,152	91,799	67,616	47,451	26,783	10,999	4,919	1,743	588	179	48	19	8	--	--
Other softwoods	4,915	2,892	1,136	619	171	18	68	--	11	--	--	--	--	--	--
Total	2,088,197	1,010,161	479,925	317,851	161,610	66,076	27,660	11,056	6,117	3,746	1,846	1,012	998	137	2
Hardwoods															
Select white oaks	214,242	117,230	31,207	20,721	14,913	10,265	7,853	4,966	3,139	1,774	966	597	489	108	14
Select red oaks	266,432	111,372	35,752	34,341	28,605	21,281	14,213	8,297	5,304	3,206	1,767	1,039	1,082	169	4
Other red oaks	257,326	155,759	30,485	23,601	18,344	11,928	7,487	4,234	2,800	1,264	678	356	349	41	--
Select hickory	57,659	36,922	7,428	4,285	3,927	2,363	1,562	682	303	121	47	10	9	--	--
Other hickory	69,516	40,512	14,206	9,736	3,194	944	660	178	57	20	6	--	3	--	--
Basswood	208,609	81,847	35,999	29,366	26,339	17,916	8,949	4,355	1,893	964	450	259	227	42	3
Beech	10,819	7,549	1,573	315	399	219	265	181	99	116	45	33	25	--	--
Yellow birch	97,173	45,191	25,526	11,206	6,463	3,966	2,043	1,219	709	489	185	89	76	11	--
Hard maple	863,036	471,040	195,509	98,506	50,990	21,994	10,661	5,877	3,688	2,195	1,198	655	632	90	1
Soft maple	1093,477	641,815	255,553	111,352	49,380	19,961	7,779	3,933	1,766	943	447	255	234	54	5
Elm	288,127	188,573	45,014	21,516	12,992	8,599	5,366	2,789	1,687	810	349	178	206	43	5
Black ash	311,352	176,816	64,762	38,318	17,954	8,312	3,335	1,089	523	161	44	27	11	--	--
White & green ash	160,912	107,813	18,426	12,640	8,667	6,501	3,656	1,719	888	349	131	38	73	11	--
Cottonwood	2,581	978	186	329	189	123	240	283	35	75	58	17	21	39	8
Willow	8,554	6,187	780	359	356	240	232	109	102	116	33	15	23	2	--
Hackberry	5,169	4,829	--	187	64	--	53	31	--	--	--	--	5	--	--
Balsam poplar	21,697	13,890	2,698	2,445	1,116	633	325	385	135	18	28	21	2	1	--
Bigtooth aspen	269,819	165,095	29,407	24,282	20,958	15,992	9,255	3,185	1195	363	59	20	6	2	--
Quaking aspen	1,529,163	1,083,897	175,664	108,344	83,649	47,601	20,139	7,136	2,137	480	93	20	3	--	--
Paper birch	494,573	195,273	126,938	83,788	57,220	21,887	6,894	1,982	484	84	18	3	2	--	--
River birch	3,682	1,571	1,028	489	279	158	78	31	27	--	13	5	3	--	--
Black cherry	236,003	189,502	24,216	10,449	5,599	3,875	1239	767	182	117	41	5	11	--	--
Black walnut	3,420	1,511	--	539	372	299	305	241	39	83	17	11	3	--	--
Butternut	9,847	5,339	1034	675	1260	540	454	269	177	61	24	4	8	2	--
Other hardwoods	41,576	27,488	8,891	2,855	1,302	591	250	151	9	17	22	--	--	--	--
Noncommercial specie	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	6,524,764	3,877,999	1,132,282	650,644	414,531	226,188	113,293	54,089	27,378	13,826	6,719	3,657	3,503	615	40
All species	8,612,961	4,888,160	1,612,207	968,495	576,141	292,264	140,953	65,145	33,495	17,572	8,565	4,669	4,501	752	42

Table 22.--Net volume of growing stock on commercial forest land by species group, Wisconsin, 1968 and 1983

(In thousand cubic feet)

Species group	1968[1/]	1983
Softwoods		
Jack pine	432,849	536,333
Red pine	245,342	763,226
White pine	424,471	565,605
White spruce	81,855	199,628
Black spruce	92,206	123,955
Balsam fir	440,205	553,038
Hemlock	339,558	283,898
Tamarack	113,325	133,877
Eastern redcedar	356	3,973
Northern white-cedar	348,283	471,544
Other softwoods	650	3,231
Total	2,519,100	3,638,308
Hardwoods		
White oak	407,850	632,216
Select red oak	1,000,373	1,419,689
Other red oak	372,078	625,311
Select hickory	73,609	113,434
Other hickory	33,099	80,472
Basswood	561,023	835,765
Beech	25,326	28,707
Yellow birch	220,444	207,564
Hard maple	1,004,585	1,494,611
Soft maple	679,959	1,219,528
Elm	695,795	434,129
Black ash	305,109	426,864
White & green ash	200,676	310,499
Cottonwood	19,298	32,668
Willow	14,778	24,200
Hackberry	988	2,478
Balsam poplar	32,441	39,414
Bigtooth aspen	522,579	686,786
Quaking aspen	1,648,199	1,938,487
Paper birch	720,835	1,046,686
River birch	8,500	8,646
Black cherry	69,270	164,017
Black walnut	7,407	22,609
Butternut	18,361	38,952
Other hardwoods	6,318	26,145
Total	8,648,900	11,859,877
All species	11,168,000	15,498,185

[1/] Figures have been adjusted from those published after the 1968 survey to conform to 1983 volumes because of changes in survey definitions and procedures.

Table 23.--Net volume of all live trees on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Jack pine	576,685	168,968	180,172	125,577	70,419	23,569	7,275	531	174	--	--	--	--
Red pine	771,606	221,938	198,829	119,906	75,193	40,493	39,240	37,135	21,196	11,546	6,130	--	--
White pine	600,400	24,220	44,791	51,014	61,806	69,276	69,955	73,034	57,477	47,062	74,343	26,926	496
White spruce	205,234	28,169	49,084	44,372	33,477	23,063	13,965	6,924	2,340	2,292	1,548	--	--
Black spruce	127,049	65,421	38,361	16,074	5,065	881	1,095	152	--	--	--	--	--
Balsam fir	566,663	153,514	172,561	137,521	63,439	21,809	15,540	2,077	202	--	--	--	--
Hemlock	303,195	10,726	22,020	35,576	41,775	44,608	37,686	41,133	25,631	16,072	24,803	3,165	--
Tamarack	139,170	52,311	48,681	18,912	12,489	3,975	1,151	1,323	328	--	--	--	--
Eastern redcedar	5,865	3,155	1,124	840	292	160	294	--	--	--	--	--	--
Northern white-cedar	537,041	128,938	145,908	110,682	77,904	39,901	19,753	7,933	3,563	1,512	947	--	--
Other softwoods	4,919	1,394	862	640	1,403	--	620	--	--	--	--	--	--
Total	3,837,827	858,754	902,393	661,114	443,262	267,735	206,574	170,242	110,911	78,484	107,771	30,091	496
Hardwoods													
White oak	853,021	57,257	86,724	106,178	128,006	119,187	104,754	76,538	54,061	42,466	53,121	20,991	3,738
Select red oak	1,617,120	126,434	185,630	231,297	240,870	205,061	179,139	134,323	99,742	75,242	105,203	33,234	945
Other red oak	927,994	77,244	123,269	146,751	148,030	127,309	109,104	68,775	44,503	29,551	44,747	8,260	451
Select hickory	135,646	20,244	26,258	27,775	25,728	16,356	10,980	5,062	2,063	609	571	--	--
Other hickory	86,738	35,859	21,582	9,558	12,451	4,191	1,888	705	253	--	251	--	--
Basswood	916,982	90,474	163,125	198,506	155,492	111,014	68,215	47,024	28,446	20,234	24,025	8,196	2,231
Beech	36,766	1,057	2,797	2,929	5,792	4,998	4,235	5,959	3,256	2,611	2,716	416	--
Yellow birch	272,271	25,207	39,242	49,710	41,365	34,291	26,272	24,039	11,689	7,856	9,782	2,818	--
Hard maple	1,750,232	328,519	334,088	261,129	203,305	165,237	137,660	107,052	74,648	50,954	69,306	17,788	546
Soft maple	1,451,822	403,536	333,478	238,987	151,494	107,035	70,059	49,808	29,819	23,463	25,973	14,313	3,857
Elm	519,445	40,069	66,516	87,422	89,910	71,712	61,229	36,297	21,012	13,162	21,188	9,802	1,126
Black ash	457,794	154,808	117,701	85,529	51,181	22,928	15,364	5,811	2,289	1,486	697	--	--
White & green ash	342,931	42,693	57,087	71,940	62,163	43,698	30,375	15,305	6,989	2,537	8,510	1,634	--
Cottonwood	35,476	608	1,278	1,255	4,334	6,856	1,082	3,267	3,381	1,084	2,999	6,455	2,877
Willow	34,446	940	2,003	2,519	4,203	3,709	4,237	5,486	2,324	2,004	4,630	2,391	--
Hackberry	2,687	269	465	--	796	769	--	--	--	--	388	--	--
Balsam poplar	41,033	4,570	6,026	6,585	5,476	9,494	4,319	1,017	1,546	1,504	330	166	--
Bigtooth aspen	725,731	75,927	140,694	182,628	168,617	85,852	44,979	19,243	4,266	2,459	835	231	--
Quaking aspen	2,101,770	420,341	551,596	517,238	334,142	173,837	72,420	23,133	6,506	2,055	502	--	--
Paper birch	1,143,339	344,603	380,347	236,107	112,200	46,863	16,711	3,981	1,947	269	206	105	--
River birch	11,392	1,191	2,132	2,216	2,153	786	1,257	--	1,091	343	223	--	--
Black cherry	233,533	61,900	52,796	51,400	25,476	24,458	8,169	4,770	2,251	954	1,283	76	--
Black walnut	27,406	2,519	2,843	4,167	5,296	5,233	1,863	3,416	1,016	732	321	--	--
Butternut	57,918	4,080	12,811	8,287	10,390	8,274	8,006	2,974	1,453	568	826	249	--
Other hardwoods	53,256	13,278	10,888	7,267	7,514	6,653	3,424	2,077	806	138	1,054	157	--
Noncommercial sp.	72,694	40,891	19,546	7,046	4,368	710	133	--	--	--	--	--	--
Total	13,909,443	2,374,518	2,740,922	2,544,426	2,000,752	1,406,511	985,874	646,062	405,357	282,281	379,687	127,282	15,771
All species	17,747,270	3,233,272	3,643,315	3,205,540	2,444,014	1,674,246	1,192,448	816,304	516,268	360,765	487,458	157,373	16,267

Table 24.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Wisconsin, 1983

(In thousand cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Live trees			
Growing-stock trees			
Poletimber	8,444,948	1,686,332	6,758,616
Sawtimber			
Saw log portion	4,791,822	1,491,395	3,300,427
Upper stem portion	2,261,415	460,581	1,800,834
Subtotal	7,053,237	1,951,976	5,101,261
Total growing stock	15,498,185	3,638,308	11,859,877
Cull trees			
Rough and rotten cull trees			
Poletimber	979,018	75,356	903,662
Sawtimber	848,895	89,361	759,534
Subtotal	1,827,913	164,717	1,663,196
Short-log trees	421,172	34,802	386,370
Total cull	2,249,085	199,519	2,049,566
All live trees	17,747,270	3,837,827	13,909,443
Salvable dead trees			
Growing-stock trees	444,319	78,795	365,524
Cull trees	11,511	1,776	9,735
All salvable dead trees	455,830	80,571	375,259
All classes	18,203,100	3,918,398	14,284,702

Table 25.--Net volume of growing stock, sawtimber, short-log, and rough and rotten trees on commercial forest land by individual species, Wisconsin, 1983

Species	All live trees				Saw-log size trees	
	Total all live	Growing stock	Short-log cull	Rough and rotten cull	Total saw log	Sawtimber	Short-log[1/]
	Thousand cubic feet				Thousand board feet[1/]		
Softwoods							
Jack pine	576,685	536,333	6,579	33,773	1,092,224	1,069,425	22,799
Red pine	771,606	763,226	380	8,000	1,998,648	1,997,086	1,562
White pine	600,400	565,605	11,024	23,771	2,703,704	2,666,253	37,451
White spruce	205,234	199,628	559	5,047	609,338	606,863	2,475
Black spruce	127,049	123,955	192	2,902	102,290	101,796	494
Balsam fir	566,663	553,038	1,381	12,244	1,035,117	1,031,536	3,581
Hemlock	303,195	283,898	6,026	13,271	1,145,397	1,130,685	14,712
Tamarack	139,170	133,877	620	4,673	196,553	193,864	2,689
Eastern redcedar	5,865	3,973	--	1,892	4,843	4,843	--
Northern white-cedar	537,041	471,544	7,677	57,820	1,145,197	1,118,865	26,332
Scotch pine	4,508	2,820	364	1,324	9,450	7,630	1,820
Norway spruce	411	411	--	--	--	--	--
Total	3,837,827	3,638,308	34,802	164,717	10,042,761	9,928,846	113,915
Hardwoods							
White oak	618,672	465,580	48,028	105,064	1,774,463	1,648,564	125,899
Swamp white oak	26,933	22,575	1,671	2,687	89,731	85,459	4,272
Bur oak	207,416	144,061	15,607	47,748	538,012	496,755	41,257
Northern red oak	1,617,120	1,419,689	58,301	139,130	4,686,524	4,555,263	131,261
Northern pin oak	406,506	258,522	25,536	122,448	740,780	682,670	58,110
Black oak	521,488	366,789	41,946	112,753	1,231,153	1,135,300	95,853
Shagbark hickory	135,646	113,434	4,065	18,147	283,167	272,089	11,078
Bitternut hickory	86,660	80,472	1,319	4,869	90,020	86,411	3,609
Pignut hickory	78	--	--	78	--	--	--
American basswood	916,982	835,765	16,376	64,841	2,027,404	1,991,915	35,489
Beech	36,766	28,707	1,674	6,385	121,659	117,188	4,471
Yellow birch	272,271	207,564	11,098	53,609	587,744	561,730	26,014
Black maple	1,502	1,309	193	--	7,129	6,619	510
Sugar maple	1,748,730	1,493,302	47,216	208,212	3,492,747	3,377,801	114,946
Red maple	1,336,943	1,130,926	27,768	178,249	1,632,643	1,557,812	74,831
Silver maple	114,879	88,602	7,083	19,194	319,657	301,424	18,233
American elm	433,018	360,173	21,507	51,338	1,048,267	993,766	54,501
Slippery elm	61,416	50,435	2,296	8,685	140,658	134,819	5,839
Rock elm	25,011	23,521	132	1,358	54,457	54,123	334
Black ash	457,794	426,864	1,962	28,968	555,392	549,728	5,664
White ash	238,348	218,410	4,497	15,441	556,410	546,016	10,394
Green ash	104,583	92,089	2,570	9,924	273,131	267,163	5,968
Eastern cottonwood	35,476	32,668	1,311	1,497	134,968	130,777	4,191
Black willow	34,446	24,200	2,891	7,355	93,358	84,501	8,857
Hackberry	2,687	2,478	--	209	8,473	8,473	--
Balsam poplar	41,033	39,414	327	1,292	100,721	99,922	799
Bigtooth aspen	725,731	686,786	7,574	31,371	1,397,682	1,385,402	12,280
Quaking aspen	2,101,770	1,938,487	11,740	151,543	2,681,364	2,655,293	26,071
Paper birch	1,143,339	1,046,686	8,418	88,235	814,443	791,454	22,989
River birch	11,392	8,646	645	2,101	21,616	19,495	2,121
Black cherry	233,533	164,017	6,276	63,240	279,098	262,572	16,526
Black walnut	27,406	22,609	798	3,999	86,858	84,770	2,088
Butternut	57,918	38,952	2,758	16,208	131,337	123,867	7,470
Boxelder	37,039	14,535	2,215	20,289	32,692	24,662	8,030
Northern catalpa	397	--	--	397	--	--	--
Honeylocust	1,193	1,128	--	65	2,535	2,535	--
Red mulberry	1,157	205	--	952	--	--	--
Black locust	13,470	10,277	572	2,621	12,246	10,229	2,017
Total	13,836,749	11,859,877	386,370	1,590,502	26,048,539	25,106,567	941,972
All species[2/]	17,674,576	15,498,185	421,172	1,755,219	36,091,300	35,035,413	1,055,887

[1/] International 1/4-inch rule.

[2/] These totals do not include volume for noncommercial species. Volumes for individual noncommercial species are found in Table 26.

Table 26.--Net volume of noncommercial species on commercial forest land by individual species, Wisconsin, 1983

(In thousand cubic feet)

Species	Cull volume
Ailanthus	576
American hornbeam	583
Hawthorn	2,892
Apple	1,104
Eastern hophornbeamam	60,344
Pincherry	1,243
Chokecherry	5,377
Mountain ash	504
Peachleaf willow	71
All species	72,694

Table 27.--Net volume of growing stock on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1983

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	536,333	98,249	237,849	190,546	7,060	2,629
Red pine	763,226	264,500	179,071	232,454	67,514	19,687
White pine	565,605	208,242	154,382	172,290	14,305	16,386
White spruce	199,628	72,646	121,342	905	310	4,425
Black spruce	123,955	76,929	41,303	3,982	914	827
Balsam fir	553,038	235,337	299,183	16,335	194	1,989
Hemlock	283,898	188,149	66,348	26,895	--	2,506
Tamarack	133,877	38,276	59,582	25,976	--	10,043
Eastern redcedar	3,973	--	--	405	1,479	2,089
Northern white-cedar	471,544	241,284	124,494	30,702	--	75,064
Other softwoods	3,231	--	325	2,565	--	341
Total	3,638,308	1,423,612	1,283,879	703,055	91,776	135,986
Hardwoods						
White oak	632,216	10,329	73,731	160,013	278,311	109,832
Select red oak	1,419,689	209,694	392,975	336,908	403,571	76,541
Other red oak	625,311	42,462	41,248	317,206	175,245	49,150
Select hickory	113,434	--	--	5,344	74,011	34,079
Other hickory	80,472	10,553	9,803	11,836	40,083	8,197
Basswood	835,765	273,476	334,289	75,883	124,839	27,278
Beech	28,707	14,767	--	1,092	--	12,848
Yellow birch	207,564	89,587	85,401	24,323	1,263	6,990
Hard maple	1,494,611	639,062	553,791	115,891	116,869	68,998
Soft maple	1,219,528	298,795	468,019	306,458	91,605	54,651
Elm	434,129	116,361	141,996	43,125	88,963	43,684
Black ash	426,864	81,141	226,230	63,807	14,133	41,553
White & green ash	310,499	71,562	83,849	38,682	44,283	72,123
Cottonwood	32,668	7,586	--	2,368	18,288	4,426
Willow	24,200	2,020	163	3,034	6,822	12,161
Hackberry	2,478	--	--	--	1,635	843
Balsam poplar	39,414	26,115	8,547	--	1,466	3,286
Bigtooth aspen	686,786	153,953	272,055	153,865	87,754	19,159
Quaking aspen	1,938,487	589,553	872,273	351,029	79,237	46,395
Paper birch	1,046,686	366,696	438,362	127,154	91,251	23,223
River birch	8,646	--	--	2,706	5,940	--
Black cherry	164,017	41,678	19,820	16,345	47,829	38,345
Black walnut	22,609	--	--	220	16,233	6,156
Butternut	38,952	4,970	4,841	4,880	21,628	2,633
Other hardwoods	26,145	104	118	3,641	12,636	9,646
Total	11,859,877	3,050,464	4,027,511	2,165,810	1,843,895	772,197
All species	15,498,185	4,474,076	5,311,390	2,868,865	1,935,671	908,183

Table 28.--Net volume of sawtimber on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	1,069,425	227,227	403,480	416,129	19,028	3,561
Red pine	1,997,086	902,043	654,363	325,587	73,260	41,833
White pine	2,666,253	1,032,510	745,829	772,302	57,982	57,630
White spruce	606,863	223,435	368,931	3,147	--	11,350
Black spruce	101,796	65,215	33,543	3,038	--	--
Balsam fir	1,031,536	422,051	588,647	18,838	--	2,000
Hemlock	1,130,685	772,542	264,927	88,210	--	5,006
Tamarack	193,864	41,560	94,390	34,873	--	23,041
Eastern redcedar	4,843	--	--	1,272	1,837	1,734
Northern white-cedar	1,118,865	510,669	388,516	40,436	--	179,244
Other softwoods	7,630	--	1,392	6,238	--	--
Total	9,928,846	4,197,252	3,544,018	1,710,070	152,107	325,399
Hardwoods						
White oak	2,230,778	28,737	202,018	472,657	1,037,655	489,711
Select red oak	4,555,263	565,970	846,693	1,106,582	1,698,953	337,065
Other red oak	1,817,970	105,416	100,877	772,840	657,420	181,417
Select hickory	272,089	--	--	13,982	161,696	96,411
Other hickory	86,411	14,715	9,661	19,733	29,895	12,407
Basswood	1,991,915	562,327	732,985	213,198	387,042	96,363
Beech	117,188	59,359	--	4,749	--	53,080
Yellow birch	561,730	272,974	221,270	54,922	3,262	9,302
Hard maple	3,384,420	1,469,909	905,072	341,476	425,061	242,902
Soft maple	1,859,236	351,355	498,562	563,439	265,802	180,078
Elm	1,182,708	324,027	411,041	109,512	228,878	109,250
Black ash	549,728	99,241	269,758	100,226	30,886	49,617
White & green ash	813,179	179,441	190,571	96,736	131,000	215,431
Cottonwood	130,777	30,690	--	10,173	73,983	15,931
Willow	84,501	7,351	720	10,825	19,288	46,317
Hackberry	8,473	--	--	--	4,632	3,841
Balsam poplar	99,922	64,911	17,149	--	6,428	11,434
Bigtooth aspen	1,385,402	276,262	530,658	266,184	250,507	61,791
Quaking aspen	2,655,293	874,391	1,255,261	328,348	136,605	60,688
Paper birch	791,454	301,063	293,605	55,304	115,121	26,361
River birch	19,495	--	--	5,566	13,929	--
Black cherry	262,572	60,306	14,138	10,963	66,409	110,756
Black walnut	84,770	--	--	1,275	59,651	23,844
Butternut	123,867	22,406	13,381	21,233	60,829	6,018
Other hardwoods	37,426	577	--	5,743	22,074	9,032
Total	25,106,567	5,671,428	6,513,420	4,585,666	5,887,006	2,449,047
All species	35,035,413	9,868,680	10,057,438	6,295,736	6,039,113	2,774,446

[1/] International 1/4-inch rule.

Table 29.--Net volume of growing stock on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Jack pine	536,333	156,717	172,995	118,496	64,503	18,221	4,968	259	174	--	--	--	--
Red pine	763,226	218,865	195,820	118,526	75,069	40,311	39,043	36,912	21,196	11,354	6,130	--	--
White pine	565,605	22,685	41,619	45,631	57,810	65,782	67,084	69,954	55,573	43,562	70,957	24,452	496
White spruce	199,628	28,054	46,623	43,109	32,632	22,648	13,540	6,842	2,340	2,292	1,548	--	--
Black spruce	123,955	63,946	37,278	15,672	4,931	881	1,095	152	--	--	--	--	--
Balsam fir	553,038	151,614	168,183	133,679	61,288	21,248	15,167	1,657	202	--	--	--	--
Hemlock	283,898	9,884	19,289	32,683	37,671	41,840	36,267	39,178	23,732	16,026	24,305	3,023	--
Tamarack	133,877	50,668	46,609	18,303	12,180	3,315	1,151	1,323	328	--	--	--	--
Eastern redcedar	3,973	2,705	440	374	--	160	294	--	--	--	--	--	--
Northern white-cedar	471,544	118,105	131,884	94,770	65,180	34,734	16,118	6,709	2,256	1,148	640	--	--
Other softwoods	3,231	1,171	682	139	941	--	298	--	--	--	--	--	--
Total	3,638,308	824,414	861,422	621,382	412,205	249,140	195,025	162,986	105,801	74,382	103,580	27,475	496
Hardwoods													
White oak	632,216	44,993	67,646	82,903	99,211	89,817	76,240	56,020	38,563	29,539	33,222	11,242	2,820
Select red oak	1,419,689	110,921	169,074	210,240	215,635	179,597	156,984	122,455	85,495	61,248	84,973	22,122	945
Other red oak	625,311	52,778	88,908	102,876	101,580	82,600	74,094	43,964	29,805	19,182	25,079	4,445	--
Select hickory	113,434	15,804	23,598	22,222	22,217	13,722	8,282	4,346	2,063	609	571	--	--
Other hickory	80,472	35,109	19,327	9,102	10,300	3,784	1,641	705	253	--	251	--	--
Basswood	835,765	80,322	154,472	186,725	145,415	102,206	60,489	39,864	23,420	16,769	18,920	6,300	863
Beech	28,707	1,057	2,637	2,377	4,347	4,101	3,150	4,598	2,323	2,017	2,100	--	--
Yellow birch	207,564	19,816	31,097	37,029	30,178	26,230	21,239	19,246	9,062	5,712	6,271	1,684	--
Hard maple	1,494,611	294,142	299,877	221,980	170,347	134,764	115,036	89,242	61,226	42,178	53,296	12,231	292
Soft maple	1,219,528	358,980	295,040	202,043	122,251	86,251	52,394	36,988	21,930	14,903	19,287	8,075	1,386
Elm	434,129	33,220	56,825	74,562	76,945	59,486	49,226	31,307	17,115	10,797	17,256	6,376	1,014
Black ash	426,864	145,588	109,323	79,453	47,616	21,525	14,044	5,419	1,800	1,486	610	--	--
White & green ash	310,499	39,604	51,940	66,009	57,431	38,773	26,871	13,485	6,662	2,299	5,965	1,460	--
Cottonwood	32,668	400	953	1,255	3,857	6,623	1,082	3,267	3,193	1,084	1,959	6,379	2,616
Willow	24,200	527	1,501	2,191	3,796	2,518	3,443	5,038	1,830	1,000	2,063	293	--
Hackberry	2,478	269	256	--	796	769	--	--	--	--	388	--	--
Balsam poplar	39,414	4,551	5,895	6,275	5,129	9,425	4,052	690	1,546	1,504	181	166	--
Bigtooth aspen	686,786	71,141	134,620	177,903	160,696	79,940	40,831	15,888	3,398	1,585	553	231	--
Quaking aspen	1,938,487	388,802	524,694	481,407	304,928	152,687	62,121	18,070	4,415	1,057	306	--	--
Paper birch	1,046,686	318,687	355,167	215,487	100,012	40,153	13,128	2,988	772	158	134	--	--
River birch	8,646	1,191	1,602	1,637	1,369	675	892	--	714	343	223	--	--
Black cherry	164,017	41,699	35,905	39,064	18,874	16,151	5,151	4,221	1,795	336	821	--	--
Black walnut	22,609	1,978	2,288	3,435	4,246	4,986	1,166	2,916	696	657	241	--	--
Butternut	38,952	2,369	8,517	5,713	7,128	5,778	5,218	2,195	1,001	235	549	249	--
Other hardwoods	26,145	8,163	6,573	4,671	2,805	2,598	221	457	657	--	--	--	--
Total	11,859,877	2,072,111	2,447,735	2,236,559	1,717,109	1,165,159	796,995	523,369	319,734	214,698	275,219	81,253	9,936
All species	15,498,185	2,896,525	3,309,157	2,857,941	2,129,314	1,414,299	992,020	686,355	425,535	289,080	378,799	108,728	10,432

Table 30.--Net volume of sawtimber on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Jack pine	1,069,425	614,842	331,959	94,390	25,945	1,364	925	--	--	--	--
Red pine	1,997,086	683,569	427,496	229,051	222,434	211,224	121,834	65,774	35,704	--	--
White pine	2,666,253	181,392	269,342	332,735	357,697	386,014	314,620	251,808	420,250	149,295	3,100
White spruce	606,863	193,155	157,695	114,896	70,699	36,495	12,677	12,618	8,628	--	--
Black spruce	101,796	66,752	23,789	4,529	5,890	836	--	--	--	--	--
Balsam fir	1,031,536	556,056	283,477	104,265	77,960	8,704	1,074	--	--	--	--
Hemlock	1,130,685	116,503	153,568	182,781	165,446	183,978	113,915	78,166	120,926	15,402	--
Tamarack	193,864	95,291	64,831	18,099	6,406	7,379	1,858	--	--	--	--
Eastern redcedar	4,843	2,166	--	943	1,734	--	--	--	--	--	--
Northern white-cedar	1,118,865	461,306	330,413	181,738	86,408	36,467	12,491	6,410	3,632	--	--
Other softwoods	7,630	773	5,185	--	1,672	--	--	--	--	--	--
Total	9,928,846	2,971,805	2,047,755	1,263,427	1,022,291	872,461	579,394	414,776	589,140	164,697	3,100
Hardwoods											
White oak	2,230,778	--	547,335	464,666	381,770	275,608	187,934	143,329	161,257	54,998	13,881
Select red oak	4,555,263	--	1,046,216	866,537	761,430	600,122	422,963	306,281	431,742	114,966	5,006
Other red oak	1,817,970	--	483,256	390,234	351,422	210,024	143,515	93,200	123,840	22,479	--
Select hickory	272,089	--	123,459	70,741	41,159	21,023	10,028	2,910	2,769	--	--
Other hickory	86,411	--	53,917	18,744	7,924	3,431	1,207	--	1,188	--	--
Basswood	1,991,915	--	685,154	485,950	291,748	195,147	116,180	83,918	96,371	32,801	4,646
Beech	117,188	--	23,377	21,512	15,959	23,464	11,790	10,255	10,831	--	--
Yellow birch	561,730	--	122,373	118,456	102,120	96,724	47,215	30,551	34,618	9,673	--
Hard maple	3,384,420	--	806,569	655,307	573,408	454,175	317,375	221,872	286,362	67,680	1,672
Soft maple	1,859,236	--	680,246	443,640	256,300	175,251	102,419	69,134	88,672	37,142	6,432
Elm	1,182,708	--	325,061	255,502	216,264	139,920	78,083	49,971	81,684	31,142	5,081
Black ash	549,728	--	300,582	124,830	76,187	28,332	9,275	7,456	3,066	--	--
White & green ash	813,179	--	331,457	204,301	134,648	65,668	31,897	10,843	27,637	6,728	--
Cottonwood	130,777	--	15,930	26,857	4,486	13,793	13,722	4,810	8,861	29,716	12,602
Willow	84,501	--	15,803	10,288	14,202	21,311	7,911	4,357	9,284	1,345	--
Hackberry	8,473	--	3,283	3,358	--	--	--	--	1,832	--	--
Balsam poplar	99,922	--	20,696	40,746	18,580	3,281	7,438	7,412	909	860	--
Bigtooth aspen	1,385,402	--	714,583	370,774	193,901	77,366	16,805	7,921	2,827	1,225	--
Quaking aspen	2,655,293	--	1,433,226	765,494	326,058	98,113	24,594	6,016	1,792	--	--
Paper birch	791,454	--	493,152	206,326	69,771	16,252	4,292	890	771	--	--
River birch	19,495	--	6,297	3,136	4,088	--	3,308	1,606	1,060	--	--
Black cherry	262,572	--	111,295	88,494	26,675	21,428	8,972	1,622	4,086	--	--
Black walnut	84,770	--	26,662	28,400	6,210	15,388	3,616	3,289	1,205	--	--
Butternut	123,867	--	42,483	32,103	27,555	11,293	5,242	1,189	2,775	1,227	--
Other hardwoods	37,426	--	15,548	14,310	1,235	2,561	3,772	--	--	--	--
Total	25,106,567	--	8,427,960	5,710,706	3,903,100	2,569,675	1,579,553	1,068,832	1,385,439	411,982	49,320
All species	35,035,413	2,971,805	10,475,715	6,974,133	4,925,391	3,442,136	2,158,947	1,483,608	1,974,579	576,679	52,420

[1/] International 1/4-inch rule.

Table 31.--Net volume of growing stock on commercial forest land by species group and forest type, Wisconsin, 1983

(In thousand cubic feet)

Species group	All types	Forest type							
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack
Softwoods									
Jack pine	536,333	372,104	21,980	11,844	237	--	366	417	331
Red pine	763,226	20,618	588,740	39,506	4,892	417	3,353	163	496
White pine	565,605	8,014	42,851	217,530	14,757	2,356	3,424	9,573	6,538
White spruce	199,628	--	2,515	4,680	26,796	83,198	641	6,246	558
Black spruce	123,955	413	1,873	3,243	19,002	367	55,316	16,879	7,715
Balsam fir	553,038	80	3,851	7,170	180,454	2,640	20,416	37,002	6,897
Hemlock	283,898	--	1,074	2,637	6,270	131	2,346	12,117	79
Tamarack	133,877	--	--	1,217	5,324	--	11,733	14,166	71,850
Eastern redcedar	3,973	214	--	--	--	--	--	--	--
Northern white-cedar	471,544	--	587	2,158	42,281	1,036	5,541	290,468	1,383
Other softwoods	3,231	--	1,722	596	--	--	--	--	--
Total	3,638,308	401,443	665,193	290,581	300,013	90,145	103,136	387,031	95,847
Hardwoods									
White oak	632,216	753	368	3,260	77	--	--	184	--
Select red oak	1,419,689	4,527	7,279	3,466	641	--	1,017	331	120
Other red oak	625,311	13,600	6,131	7,079	99	--	75	276	--
Select hickory	113,434	--	--	334	--	--	--	197	--
Other hickory	80,472	--	--	--	--	--	--	397	--
Basswood	835,765	--	209	837	167	299	--	1,215	--
Beech	28,707	--	418	--	--	--	--	--	--
Yellow birch	207,564	--	144	370	5,153	--	432	10,633	221
Hard maple	1,494,611	--	2,360	1,859	2,362	398	233	248	105
Soft maple	1,219,528	432	5,214	10,168	12,754	688	1,678	7,454	3,419
Elm	434,129	307	1,358	639	2,099	150	--	2,319	636
Black ash	426,864	--	--	1,161	12,478	174	--	18,169	483
White & green ash	310,499	--	1,421	--	116	837	--	446	--
Cottonwood	32,668	98	--	4,887	--	--	--	--	--
Willow	24,200	--	--	--	--	--	--	438	--
Hackberry	2,478	--	--	--	--	--	--	--	--
Balsam poplar	39,414	--	--	--	1,392	325	200	1,037	--
Bigtooth aspen	686,786	4,140	3,380	4,596	1,595	185	1,037	1,250	3,295
Quaking aspen	1,938,487	14,361	21,469	29,130	34,620	4,413	12,736	12,014	4,489
Paper birch	1,046,686	2,019	5,883	9,480	21,469	522	3,805	18,015	5,459
River birch	8,646	--	--	--	--	--	--	--	--
Black cherry	164,017	--	404	1,242	766	113	151	--	--
Black walnut	22,609	--	--	--	--	--	--	--	--
Butternut	38,952	--	--	--	--	--	--	--	--
Other hardwoods	26,145	--	581	--	--	--	--	--	--
Total	11,859,877	40,237	56,619	78,508	95,788	8,104	21,364	74,623	18,227
All species	15,498,185	441,680	721,812	369,089	395,801	98,249	124,500	461,654	114,074

(Table 31 continued on next page)

(Table 31 continued)

Species group	Forest type						
	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Softwoods							
Jack pine	73,808	1,208	5,577	43,668	3,363	--	1,430
Red pine	26,483	643	16,309	47,230	14,376	--	--
White pine	46,125	23,586	130,134	44,758	15,763	--	196
White spruce	445	7,737	19,974	36,059	10,578	--	201
Black spruce	--	2,721	3,166	10,492	2,768	--	--
Balsam fir	1,191	51,343	107,962	101,446	32,513	--	73
Hemlock	1,161	17,614	232,214	5,163	3,092	--	--
Tamarack	562	12,111	4,934	7,813	3,121	--	1,046
Eastern redcedar	2,063	1,277	419	--	--	--	--
Northern white-cedar	238	49,374	54,710	14,502	9,266	--	--
Other softwoods	287	--	70	--	--	556	--
Total	152,363	167,614	575,469	311,131	94,840	556	2,946
Hardwoods							
White oak	489,145	19,715	78,529	29,057	9,434	--	1,694
Select red oak	922,648	17,446	287,090	121,880	52,592	--	652
Other red oak	515,727	8,842	26,575	40,787	3,103	--	3,017
Select hickory	92,249	207	16,709	333	3,405	--	--
Other hickory	38,557	673	38,366	2,479	--	--	--
Basswood	72,711	29,290	698,273	25,398	6,547	--	819
Beech	299	554	27,436	--	--	--	--
Yellow birch	1,007	19,189	163,473	4,129	2,813	--	--
Hard maple	51,853	15,421	1,355,943	48,642	15,086	--	101
Soft maple	101,917	289,212	540,897	195,857	49,727	--	111
Elm	48,467	94,293	255,712	21,388	5,633	--	1,128
Black ash	8,409	260,341	92,375	26,272	6,097	--	905
White & green ash	27,301	71,982	191,697	11,986	4,533	--	180
Cottonwood	6,972	12,392	4,733	3,353	233	--	--
Willow	--	18,109	3,247	1,767	386	--	253
Hackberry	921	581	976	--	--	--	--
Balsam poplar	1,156	6,294	4,334	22,837	1,839	--	--
Bigtooth aspen	145,677	4,555	100,142	388,571	28,363	--	--
Quaking aspen	89,567	62,761	273,905	1,293,698	82,300	--	3,024
Paper birch	111,849	40,176	202,323	265,809	358,814	--	1,063
River birch	1,116	7,530	--	--	--	--	--
Black cherry	57,727	3,058	73,195	24,323	3,038	--	--
Black walnut	17,986	--	4,167	--	--	--	456
Butternut	17,002	243	19,306	1,837	311	--	253
Other hardwoods	3,876	10,503	10,442	594	149	--	--
Total	2,824,139	993,367	4,469,845	2,530,997	634,403	--	13,656
All species	2,976,502	1,160,981	5,045,314	2,842,128	729,243	556	16,602

Table 32.--Net volume of sawtimber on commercial forest land by species group and forest type, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All types	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack
Softwoods									
Jack pine	1,069,425	640,234	43,565	36,157	1,258	--	710	--	--
Red pine	1,997,086	79,464	1,226,095	175,853	25,884	--	17,844	911	2,846
White pine	2,666,253	32,108	172,307	1,003,904	74,808	12,618	12,424	44,300	28,493
White spruce	606,863	--	8,743	22,215	93,320	188,087	2,603	19,902	1,811
Black spruce	101,796	488	--	4,406	22,260	767	27,767	19,552	5,917
Balsam fir	1,031,536	--	6,167	17,920	316,487	5,301	72,294	28,539	2,756
Hemlock	1,130,685	--	2,339	10,464	25,008	648	9,825	43,089	339
Tamarack	193,864	--	--	2,799	11,916	--	4,223	20,094	64,873
Eastern redcedar	4,843	1,272	--	--	--	--	--	--	--
Northern white-cedar	1,118,865	--	1,916	9,149	123,315	--	14,805	579,374	1,693
Other softwoods	7,630	--	6,238	1,392	--	--	--	--	--
Total	9,928,846	753,566	1,467,370	1,284,259	694,256	207,421	162,495	755,761	108,728
Hardwoods									
White oak	2,230,778	--	2,079	9,108	--	--	--	1,004	--
Select red oak	4,555,263	9,787	8,884	11,485	2,683	--	1,401	1,703	595
Other red oak	1,817,970	29,514	16,400	18,642	--	--	411	1,388	--
Select hickory	272,089	--	--	--	--	--	--	1,146	--
Other hickory	86,411	--	--	--	--	--	--	1,188	--
Basswood	1,991,915	--	960	2,255	855	--	--	5,284	--
Beech	117,188	--	1,110	--	--	--	--	--	--
Yellow birch	561,730	--	611	1,307	17,925	--	1,772	27,955	629
Hard maple	3,384,420	--	1,629	7,033	4,952	1,507	698	1,330	--
Soft maple	1,859,236	--	1,084	20,087	13,112	2,016	2,106	11,348	3,917
Elm	1,182,708	1,357	--	1,825	6,583	663	--	6,817	1,838
Black ash	549,728	--	--	5,002	12,729	1,011	--	12,672	--
White & green ash	813,179	--	7,302	--	--	--	--	2,448	--
Cottonwood	130,777	--	--	19,577	--	--	--	--	--
Willow	84,501	--	--	--	--	--	--	1,896	--
Hackberry	8,473	--	--	--	--	--	--	--	--
Balsam poplar	99,922	--	--	--	626	705	--	2,999	--
Bigtooth aspen	1,385,402	3,805	4,677	5,812	1,006	--	4,236	2,085	3,319
Quaking aspen	2,655,293	9,571	29,442	40,106	49,346	5,246	23,591	21,214	2,170
Paper birch	791,454	1,655	8,171	17,575	15,797	--	3,747	15,506	3,529
River birch	19,495	--	--	--	--	--	--	--	--
Black cherry	262,572	--	1,147	--	2,578	752	--	--	--
Black walnut	84,770	--	--	--	--	--	--	--	--
Butternut	123,867	--	--	--	--	--	--	--	--
Other hardwoods	37,426	--	3,128	--	--	--	--	--	--
Total	25,106,567	55,689	86,624	159,814	128,192	11,900	37,962	117,983	15,997
All species	35,035,413	809,255	1,553,994	1,444,073	822,448	219,321	200,457	873,744	124,725

(Table 32 continued on the next page)

[1/] International 1/4-inch rule.

(Table 32 continued)

Species group	Forest type						
	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Softwoods							
Jack pine	185,144	4,293	17,634	128,189	11,457	--	784
Red pine	82,188	3,685	83,787	218,299	80,230	--	--
White pine	219,600	112,575	661,760	220,769	69,693	--	894
White spruce	--	30,333	90,146	115,384	33,258	--	1,061
Black spruce	--	8,070	6,378	5,418	773	--	--
Balsam fir	556	90,621	246,825	182,410	61,660	--	--
Hemlock	5,018	52,194	949,552	21,031	11,178	--	--
Tamarack	2,251	46,212	9,417	22,457	5,585	--	4,037
Eastern redcedar	1,734	--	1,837	--	--	--	--
Northern white-cedar	--	135,254	199,877	28,623	24,859	--	--
Other softwoods	--	--	--	--	--	--	--
Total	496,491	483,237	2,267,213	942,580	298,693	--	6,776
Hardwoods							
White oak	1,744,390	72,121	300,314	66,687	29,984	--	5,091
Select red oak	3,093,602	63,952	978,223	230,071	149,533	--	3,344
Other red oak	1,491,354	33,407	97,945	113,120	10,244	--	5,545
Select hickory	211,791	985	48,221	--	9,946	--	--
Other hickory	36,631	--	47,557	1,035	--	--	--
Basswood	191,283	67,016	1,673,290	38,928	10,422	--	1,622
Beech	--	1,042	115,036	--	--	--	--
Yellow birch	2,298	43,568	455,950	4,787	4,928	--	--
Hard maple	138,380	19,058	3,167,909	25,985	15,939	--	--
Soft maple	151,249	727,650	810,001	84,325	32,341	--	--
Elm	128,936	283,588	687,254	50,671	9,740	--	3,436
Black ash	14,713	364,880	120,618	11,261	6,842	--	--
White & green ash	61,490	231,850	483,256	15,993	9,766	--	1,074
Cottonwood	27,697	52,183	19,789	10,466	1,065	--	--
Willow	--	64,707	12,967	2,278	1,631	--	1,022
Hackberry	3,841	2,340	2,292	--	--	--	--
Balsam poplar	4,483	18,133	17,631	52,638	2,707	--	--
Bigtooth aspen	347,769	14,793	227,912	695,225	74,763	--	--
Quaking aspen	127,030	100,856	579,951	1,531,421	134,022	--	1,327
Paper birch	78,513	47,416	225,213	129,239	245,093	--	--
River birch	3,733	15,762	--	--	--	--	--
Black cherry	97,679	1,997	123,399	31,396	3,624	--	--
Black walnut	71,246	--	12,247	--	--	--	1,277
Butternut	50,703	1,345	63,926	7,893	--	--	--
Other hardwoods	7,304	15,940	10,146	908	--	--	--
Total	8,086,115	2,244,589	10,281,047	3,104,327	752,590	--	23,738
All species	8,582,606	2,727,826	12,548,260	4,046,907	1,051,283	--	30,514

Table 33.--Net volume of growing stock on commercial forest land by species group and ownership class, Wisconsin, 1983

(In thousand cubic feet)

Species group	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Softwoods										
Jack pine	536,333	67,884	20,571	30,964	108,184	9,488	58,530	59,147	18,696	162,869
Red pine	763,226	119,247	8,932	44,887	127,627	19,259	50,874	99,180	43,218	250,002
White pine	565,605	44,455	9,322	27,715	54,596	81,773	30,795	116,803	24,319	175,827
White spruce	199,628	87,585	200	8,167	28,388	352	20,372	8,801	7,146	38,617
Black spruce	123,955	20,989	--	9,574	22,803	8,184	19,217	6,569	1,877	34,742
Balsam fir	553,038	69,408	--	22,782	121,758	14,739	70,706	39,844	28,082	185,719
Hemlock	283,898	44,165	--	5,476	18,883	74,560	52,844	29,876	16,734	41,360
Tamarack	133,877	11,320	827	6,970	14,723	1,218	9,993	23,117	5,472	60,237
Eastern redcedar	3,973	--	--	--	--	--	--	3,052	--	921
Northern white-cedar	471,544	71,339	--	17,077	56,794	34,366	48,079	90,511	15,072	138,306
Other softwoods	3,231	--	--	341	--	--	--	1,024	139	1,727
Total	3,638,308	536,392	39,852	173,953	553,756	243,939	361,410	477,924	160,755	1,090,327
Hardwoods										
White oak	632,216	2,824	3,195	17,575	21,700	3,318	2,956	340,548	26,620	213,480
Select red oak	1,419,689	101,229	9,846	38,069	135,792	44,289	55,580	558,271	56,168	420,445
Other red oak	625,311	104	13,446	19,658	53,179	4,119	10,142	250,527	31,809	242,327
Select hickory	113,434	--	--	1,249	--	--	332	71,331	8,555	31,967
Other hickory	80,472	1,206	--	597	2,285	1,993	5,326	45,860	3,955	19,250
Basswood	835,765	110,491	213	12,981	119,142	44,602	104,781	161,873	28,646	253,036
Beech	28,707	--	--	--	--	8,369	974	12,309	1,975	5,080
Yellow birch	207,564	40,789	--	4,744	21,011	22,519	43,876	21,194	13,441	39,990
Hard maple	1,494,611	237,815	770	32,029	153,942	86,744	219,920	275,298	70,976	417,117
Soft maple	1,219,528	105,573	29,446	47,638	188,988	34,425	95,276	270,631	45,507	402,044
Elm	434,129	20,054	1,137	15,454	43,728	9,997	39,905	136,703	16,905	150,246
Black ash	426,864	30,626	1,161	18,261	77,500	6,786	38,330	91,029	14,397	148,774
White & green ash	310,499	20,344	2,743	6,163	25,751	6,980	28,685	117,160	13,642	89,031
Cottonwood	32,668	--	3,132	1,161	1,566	--	269	14,331	6,123	6,086
Willow	24,200	--	2,322	2,094	524	--	616	12,072	2,915	3,657
Hackberry	2,478	--	--	--	--	--	--	1,399	110	969
Balsam poplar	39,414	2,740	--	1,199	10,701	239	1,446	9,305	1,220	12,564
Bigtooth aspen	686,786	77,519	5,183	19,965	95,486	25,445	22,368	170,474	33,228	237,118
Quaking aspen	1,938,487	157,889	20,689	73,967	384,709	58,309	125,540	309,739	91,474	716,171
Paper birch	1,046,686	88,337	3,893	47,477	175,059	29,229	71,492	187,305	67,579	376,315
River birch	8,646	--	642	1,172	126	--	--	2,235	2,435	2,036
Black cherry	164,017	11,493	--	4,445	12,403	1,108	8,744	69,901	7,666	48,257
Black walnut	22,609	--	--	--	510	--	--	14,643	383	7,073
Butternut	38,952	849	--	335	488	1,245	1,425	20,516	4,114	9,980
Other hardwoods	26,145	--	143	483	137	104	--	16,164	--	9,114
Total	11,859,877	1,009,882	97,961	366,716	1,524,727	389,820	877,983	3,180,818	549,843	3,862,127
All species	15,498,185	1,546,274	137,813	540,669	2,078,483	633,759	1,239,393	3,658,742	710,598	4,952,454

Table 34.--Net volume of sawtimber on commercial forest land by species group and ownership class, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Softwoods										
Jack pine	1,069,425	111,175	51,002	69,891	175,710	33,881	81,145	152,556	57,652	336,413
Red pine	1,997,086	483,109	33,546	131,438	314,462	95,035	143,090	198,062	74,969	523,375
White pine	2,666,253	215,656	39,272	125,370	265,569	433,998	139,642	548,274	119,740	778,732
White spruce	606,863	207,937	665	27,241	107,672	857	76,145	34,483	24,721	127,142
Black spruce	101,796	14,500	--	3,433	25,639	6,898	16,817	5,541	2,992	25,976
Balsam fir	1,031,536	172,186	--	31,981	225,689	23,758	168,090	60,735	42,435	306,662
Hemlock	1,130,685	183,575	--	19,800	73,379	318,637	227,462	92,863	65,850	149,119
Tamarack	193,864	5,745	1,567	18,533	17,218	4,636	12,337	39,072	14,597	80,159
Eastern redcedar	4,843	--	--	--	--	--	--	3,949	--	894
Northern white-cedar	1,118,865	149,420	--	54,491	159,598	108,312	160,787	146,996	35,482	303,779
Other softwoods	7,630	--	--	--	--	--	--	4,573	773	2,284
Total	9,928,846	1,543,303	126,052	482,178	1,364,936	1,026,012	1,025,515	1,287,104	439,211	2,634,535
Hardwoods										
White oak	2,230,778	--	9,868	71,494	39,878	9,825	7,703	1,278,010	90,267	723,733
Select red oak	4,555,263	124,629	17,730	104,167	269,960	154,406	150,174	2,202,228	192,721	1,339,248
Other red oak	1,817,970	--	24,737	55,171	103,816	15,419	22,754	847,373	77,838	670,862
Select hickory	272,089	--	--	2,279	--	--	--	162,070	28,950	78,790
Other hickory	86,411	2,550	--	1,710	767	3,829	5,822	47,614	2,447	21,672
Basswood	1,991,915	215,190	--	26,364	205,704	146,318	214,488	530,781	71,521	581,549
Beech	117,188	--	--	--	--	32,273	3,868	56,015	10,747	14,285
Yellow birch	561,730	102,203	--	17,995	66,431	66,113	146,736	39,719	34,713	87,820
Hard maple	3,384,420	327,392	3,571	75,924	209,366	285,988	524,698	903,281	140,936	913,264
Soft maple	1,859,236	145,187	76,554	99,466	191,663	42,129	120,326	620,662	52,245	511,004
Elm	1,182,708	46,487	2,770	44,654	117,948	36,592	109,240	366,875	40,754	417,388
Black ash	549,728	25,426	967	33,415	100,264	15,291	58,133	115,540	22,635	178,057
White & green ash	813,179	58,420	11,627	18,029	63,763	9,206	91,110	293,557	33,707	233,760
Cottonwood	130,777	--	13,246	4,567	7,387	--	1,239	58,732	22,319	23,287
Willow	84,501	--	9,691	6,656	1,591	--	2,570	42,783	8,641	12,569
Hackberry	8,473	--	--	--	--	--	--	4,632	--	3,841
Balsam poplar	99,922	6,199	--	3,322	24,766	--	4,493	26,178	2,585	32,379
Bigtooth aspen	1,385,402	125,828	5,356	43,468	130,059	50,586	45,836	426,967	69,138	488,164
Quaking aspen	2,655,293	239,029	14,388	90,316	476,808	105,094	196,730	437,009	117,694	978,225
Paper birch	791,454	64,920	913	34,814	98,602	31,694	65,213	149,221	53,943	292,134
River birch	19,495	--	2,967	2,202	--	--	--	8,153	970	5,203
Black cherry	262,572	25,482	--	5,829	12,331	2,886	9,429	118,792	16,483	71,340
Black walnut	84,770	--	--	--	3,408	--	--	50,547	2,311	28,504
Butternut	123,867	4,839	--	1,803	996	3,866	6,465	66,438	13,345	26,115
Other hardwoods	37,426	--	--	1,851	799	577	--	25,060	--	9,139
Total	25,106,567	1,513,781	194,385	745,496	2,126,307	1,012,092	1,787,027	8,878,237	1,106,910	7,742,332
All species	35,035,413	3,057,084	320,437	1,227,674	3,491,243	2,038,104	2,812,542	10,165,341	1,546,121	10,376,867

[1/] International 1/4-inch rule.

Table 35.--Net volume of growing stock on commercial forest land by forest type and stand-age class, Wisconsin, 1983

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years) 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Jack pine	441,680	4,994	25,061	39,500	114,909	161,553	68,536	9,669	14,560
Red pine	721,812	4,255	70,390	207,740	194,256	108,425	50,799	14,799	19,290
White pine	369,089	4,649	11,564	13,815	17,896	39,964	29,520	42,672	71,694
Balsam fir	395,801	19,736	14,827	23,666	36,282	66,999	114,922	62,097	17,374
White spruce	98,249	373	4,688	18,454	41,587	10,288	16,742	6,117	--
Black spruce	124,500	4,416	8,027	15,587	8,700	14,388	9,752	10,208	37,985
Northern white-cedar	461,654	2,453	9,605	9,270	6,047	51,467	45,671	55,318	37,506
Tamarack	114,074	7,028	8,954	9,245	8,158	18,514	14,078	18,281	14,658
Oak-hickory	2,976,502	91,042	40,040	49,756	108,020	385,059	562,850	304,874	365,620
Elm-ash-soft maple	1,160,981	39,085	37,273	56,749	108,191	152,560	132,534	153,102	173,547
Maple-birch	5,045,314	92,082	128,574	162,001	298,472	806,595	970,200	750,001	362,517
Aspen	2,842,128	166,063	149,627	190,336	485,848	901,868	578,719	211,645	93,656
Paper birch	729,243	15,366	29,698	42,609	111,584	186,816	190,041	122,357	25,368
Exotic	556	--	556	--	--	--	--	--	--
Nonstocked	16,602	16,602	--	--	--	--	--	--	--
All types	15,498,185	468,144	538,884	838,728	1,539,950	2,904,496	2,784,364	1,761,140	1,233,775

(Table 35 continued)

(Table 35 continued)

Forest type	Stand-age class 81-90	91-100	101-120	121-140	141+
Jack pine	2,898	--	--	--	--
Red pine	18,597	24,714	8,547	--	--
White pine	53,626	4,552	23,443	20,741	34,953
Balsam fir	16,102	3,302	12,716	6,259	1,519
White spruce	--	--	--	--	--
Black spruce	12,072	2,996	--	369	--
Northern white-cedar	35,599	85,070	40,991	40,770	41,887
Tamarack	9,749	--	2,957	1,474	978
Oak-hickory	297,881	246,845	259,977	173,875	90,663
Elm-ash-soft maple	107,828	86,297	64,116	33,375	16,324
Maple-birch	376,883	307,316	334,786	194,434	261,453
Aspen	55,819	8,547	--	--	--
Paper birch	2,039	715	2,650	--	--
Exotic	--	--	--	--	--
Nonstocked	--	--	--	--	--
All types	989,093	770,354	750,183	471,297	447,777

Table 36.--Net volume of sawtimber on commercial forest land by forest type and stand-age class, Wisconsin, 1983

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years) 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Jack pine	809,255	12,550	23,852	33,932	156,007	303,726	176,248	33,711	55,517
Red pine	1,553,994	17,590	43,253	111,543	410,765	386,841	195,355	57,521	91,263
White pine	1,444,073	20,024	9,086	45,086	46,852	130,909	98,896	151,103	308,878
Balsam fir	822,448	42,094	18,934	33,153	60,776	119,868	257,789	121,029	31,350
White spruce	219,321	--	8,290	13,869	109,525	20,983	39,796	26,858	--
Black spruce	200,457	3,301	11,082	18,883	7,442	8,990	7,106	8,641	107,634
Northern white-cedar	873,744	3,970	5,417	14,870	8,713	77,379	60,549	61,536	56,383
Tamarack	124,725	9,208	9,353	6,795	3,747	14,014	8,421	24,224	24,301
Oak-hickory	8,582,606	217,768	105,159	93,675	158,521	645,694	1,119,852	844,746	1,177,060
Elm-ash-soft maple	2,727,826	84,807	72,876	65,740	146,956	280,405	256,236	350,078	477,911
Maple-birch	12,548,260	171,838	293,983	273,461	447,291	1,206,295	1,794,440	1,761,811	1,089,255
Aspen	4,046,907	264,419	168,174	210,478	537,191	995,646	945,921	460,738	273,493
Paper birch	1,051,283	23,209	31,355	29,442	132,580	222,493	306,240	230,605	58,137
Exotic	--	--	--	--	--	--	--	--	--
Nonstocked	30,514	30,514	--	--	--	--	--	--	--
All types	35,035,413	901,292	800,814	950,927	2,226,366	4,413,243	5,266,849	4,132,601	3,751,182

(Table 36 continued)

[1/] International 1/4-inch rule.

(Table 36 continued)

Forest type	Stand-age class 81-90	91-100	101-120	121-140	141+
Jack pine	13,712	--	--	--	--
Red pine	87,132	115,020	37,711	--	--
White pine	231,856	22,932	99,053	95,442	183,956
Balsam fir	50,596	12,558	44,771	22,222	7,308
White spruce	--	--	--	--	--
Black spruce	17,841	8,333	--	1,204	--
Northern white-cedar	57,047	155,513	112,279	114,016	146,072
Tamarack	15,367	--	3,877	4,509	909
Oak-hickory	1,080,031	984,003	1,028,946	743,730	383,421
Elm-ash-soft maple	334,263	290,006	199,919	111,352	57,277
Maple-birch	1,272,304	1,118,408	1,252,909	779,352	1,086,913
Aspen	157,370	33,477	--	--	--
Paper birch	6,901	1,814	8,507	--	--
Exotic	--	--	--	--	--
Nonstocked	--	--	--	--	--
All types	3,324,420	2,742,064	2,787,972	1,871,827	1,865,856

Table 37.--Net volume of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1983

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)						
		0-10	11-20	21-30	31-40	41-50	51-60	61-70
Jack pine								
Sawtimber	108,406	--	--	--	3,702	1,847	8,151	9,316
Poletimber	289,223	--	--	--	3,103	5,472	13,142	15,311
Sapling & seedling	44,051	84	662	2,060	3,174	3,588	4,912	6,124
All stands	441,680	84	662	2,060	9,979	10,907	26,205	30,751
Red pine								
Sawtimber	307,287	--	--	--	1,655	2,017	1,542	--
Poletimber	392,761	--	--	--	--	480	3,158	3,712
Sapling & seedling	21,764	152	306	243	2,279	1,440	4,833	--
All stands	721,812	152	306	243	3,934	3,937	9,533	3,712
White pine								
Sawtimber	308,695	--	647	251	5,608	1,165	4,957	2,205
Poletimber	51,886	--	--	--	--	--	1,173	--
Sapling & seedling	8,508	--	--	--	--	281	3,691	--
All stands	369,089	--	647	251	5,608	1,446	9,821	2,205
Balsam fir								
Sawtimber	138,592	--	--	--	--	5,066	16,286	4,620
Poletimber	206,947	--	--	691	--	1,199	6,688	12,266
Sapling & seedling	50,262	104	892	2,694	1,824	6,263	6,259	9,790
All stands	395,801	104	892	3,385	1,824	12,528	29,233	26,676
White spruce								
Sawtimber	63,525	--	--	--	--	--	--	2,476
Poletimber	32,747	--	--	--	--	--	--	--
Sapling & seedling	1,977	--	--	373	--	304	1,148	--
All stands	98,249	--	--	373	--	304	1,148	2,476
Black spruce								
Sawtimber	6,226	--	369	--	--	--	--	3,044
Poletimber	83,890	--	--	1,241	--	--	4,315	5,439
Sapling & seedling	34,384	175	495	3,824	970	7,272	2,591	3,965
All stands	124,500	175	864	5,065	970	7,272	6,906	12,448
Northern white-cedar								
Sawtimber	178,435	--	--	--	--	2,702	304	2,045
Poletimber	264,608	--	--	--	--	--	1,710	--
Sapling & seedling	18,611	--	30	1,346	234	2,122	1,441	--
All stands	461,654	--	30	1,346	234	4,824	3,455	2,045

(Table 37 continued on next page)

(Table 37 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine							
Sawtimber	11,916	18,771	11,468	27,741	11,068	4,426	--
Poletimber	38,728	45,632	82,642	50,165	26,593	3,177	5,258
Sapling & seedling	21,874	1,573	--	--	--	--	--
All stands	72,518	65,976	94,110	77,906	37,661	7,603	5,258
Red pine							
Sawtimber	8,525	14,173	17,245	89,447	80,202	71,431	21,050
Poletimber	10,254	27,530	11,567	67,808	86,656	54,744	126,852
Sapling & seedling	4,643	2,452	255	2,974	2,187	--	--
All stands	23,422	44,155	29,067	160,229	169,045	126,175	147,902
White pine							
Sawtimber	9,997	17,421	17,970	77,999	76,942	52,178	41,355
Poletimber	3,334	5,994	7,419	13,207	11,821	8,938	--
Sapling & seedling	4,536	--	--	--	--	--	--
All stands	17,867	23,415	25,389	91,206	88,763	61,116	41,355
Balsam fir							
Sawtimber	8,210	9,201	9,276	26,607	42,830	6,338	10,158
Poletimber	6,062	17,207	6,624	31,792	62,143	37,198	25,077
Sapling & seedling	12,569	1,213	4,375	1,740	1,167	1,372	--
All stands	26,841	27,621	20,275	60,139	106,140	44,908	35,235
White spruce							
Sawtimber	--	--	--	--	--	25,896	35,153
Poletimber	--	2,821	2,564	2,265	17,955	7,142	--
Sapling & seedling	152	--	--	--	--	--	--
All stands	152	2,821	2,564	2,265	17,955	33,038	35,153
Black spruce							
Sawtimber	--	--	--	--	2,813	--	--
Poletimber	8,187	6,282	28,293	9,141	18,540	2,452	--
Sapling & seedling	6,760	4,253	1,510	1,559	1,010	--	--
All stands	14,947	10,535	29,803	10,700	22,363	2,452	--
Northern white-cedar							
Sawtimber	6,093	7,745	2,748	10,415	38,652	41,289	66,442
Poletimber	5,648	7,226	2,407	43,757	33,008	86,650	84,202
Sapling & seedling	3,521	1,643	--	4,967	--	3,307	--
All stands	15,262	16,614	5,155	59,139	71,660	131,246	150,644

(Table 37 continued on next page)

(Table 37 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70
Tamarack								
Sawtimber	11,554	--	380	2,138	--	1,089	1,601	1,474
Poletimber	74,609	--	251	882	1,199	6,066	6,103	10,767
Sapling & seedling	27,911	208	842	1,947	3,035	3,519	5,041	2,126
All stands	114,074	208	1,473	4,967	4,234	10,674	12,745	14,367
Oak-hickory								
Sawtimber	1,884,950	--	709	5,984	11,115	38,535	56,682	92,301
Poletimber	948,482	--	--	1,284	4,296	3,430	43,846	32,751
Sapling & seedling	143,070	596	3,997	17,290	17,328	25,598	30,571	14,795
All stands	2,976,502	596	4,706	24,558	32,739	67,563	131,099	139,847
Elm-ash-soft maple								
Sawtimber	536,724	--	1,074	5,550	8,180	11,736	29,135	13,574
Poletimber	529,509	--	4,076	6,376	9,171	16,635	33,928	32,723
Sapling & seedling	94,748	460	4,448	8,781	11,440	15,897	18,144	9,263
All stands	1,160,981	460	9,598	20,707	28,791	44,268	81,207	55,560
Maple-birch								
Sawtimber	2,455,682	--	--	3,771	3,763	26,240	45,955	48,658
Poletimber	2,308,839	--	--	2,880	6,296	21,902	52,785	63,171
Sapling & seedling	280,793	794	6,987	15,947	19,184	44,749	39,200	29,778
All stands	5,045,314	794	6,987	22,598	29,243	92,891	137,940	141,607
Aspen								
Sawtimber	558,223	--	627	4,018	5,854	12,171	25,762	23,457
Poletimber	1,904,283	--	1,920	10,770	11,884	55,211	107,587	132,036
Sapling & seedling	379,622	3,000	17,288	36,736	43,725	71,166	57,608	38,872
All stands	2,842,128	3,000	19,835	51,524	61,463	138,548	190,957	194,365
Paper birch								
Sawtimber	106,169	--	--	490	--	2,737	2,929	11,234
Poletimber	560,851	--	--	680	4,058	10,103	25,372	10,922
Sapling & seedling	62,223	206	1,566	3,140	5,661	11,724	9,631	6,719
All stands	729,243	206	1,566	4,310	9,719	24,564	37,932	28,875
Exotic								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	556	--	--	--	--	--	--	--
All stands	556	--	--	--	--	--	--	--
Nonstocked	16,602	1,515	2,512	483	1,718	795	2,875	1,521
All types								
Sawtimber	6,664,468	--	3,806	22,202	39,877	105,305	193,304	214,404
Poletimber	7,648,635	--	6,247	24,804	40,007	120,498	299,807	319,098
Sapling & seedling	1,168,480	5,779	37,513	94,381	108,854	193,923	185,070	121,432
Nonstocked	16,602	1,515	2,512	483	1,718	795	2,875	1,521
All stands	15,498,185	7,294	50,078	141,870	190,456	420,521	681,056	656,455

(Table 37 continued on next page)

(Table 37 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack							
Sawtimber	--	--	--	4,872	--	--	--
Poletimber	1,992	24,393	10,502	11,243	1,211	--	--
Sapling & seedling	6,902	890	3,401	--	--	--	--
All stands	8,894	25,283	13,903	16,115	1,211	--	--
Oak-hickory							
Sawtimber	157,183	221,750	160,402	515,996	455,742	146,359	22,192
Poletimber	83,354	124,183	112,925	227,997	205,484	97,266	11,666
Sapling & seedling	7,949	7,134	4,181	9,528	4,103	--	--
All stands	248,486	353,067	277,508	753,521	665,329	243,625	33,858
Elm-ash-soft maple							
Sawtimber	27,256	48,530	54,340	99,625	139,419	74,672	23,633
Poletimber	54,177	70,400	44,555	85,144	109,201	53,670	9,453
Sapling & seedling	8,449	6,575	5,971	2,314	3,006	--	--
All stands	89,882	125,505	104,866	187,083	251,626	128,342	33,086
Maple-birch							
Sawtimber	133,637	189,535	173,803	555,608	796,307	377,561	100,844
Poletimber	139,111	274,771	175,617	609,334	654,125	255,793	53,054
Sapling & seedling	35,381	29,778	11,303	35,612	7,030	5,050	--
All stands	308,129	494,084	360,723	1,200,554	1,457,462	638,404	153,898
Aspen							
Sawtimber	36,648	62,777	43,964	105,352	171,344	38,545	27,704
Poletimber	162,104	250,419	187,834	371,517	434,289	142,357	36,355
Sapling & seedling	50,050	32,429	15,060	10,921	1,962	805	--
All stands	248,802	345,625	246,858	487,790	607,595	181,707	64,059
Paper birch							
Sawtimber	7,736	12,170	3,826	21,773	21,811	12,648	8,815
Poletimber	36,857	36,956	36,472	111,265	195,760	82,634	9,772
Sapling & seedling	4,847	7,032	3,593	5,638	2,466	--	--
All stands	49,440	56,158	43,891	138,676	220,037	95,282	18,587
Exotic							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	556	--	--	--	--	--	--
All stands	556	--	--	--	--	--	--
Nonstocked	1,463	--	2,217	589	914	--	--
All types							
Sawtimber	407,201	602,073	495,042	1,535,435	1,837,130	851,343	357,346
Poletimber	549,808	893,814	709,421	1,634,635	1,856,786	832,021	361,689
Sapling & seedling	168,189	94,972	49,649	75,253	22,931	10,534	--
Nonstocked	1,463	--	2,217	589	914	--	--
All stands	1,126,661	1,590,859	1,256,329	3,245,912	3,717,761	1,693,898	719,035

Table 38.--Net volume of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1983

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70
Jack pine								
Sawtimber	387,722	--	--	--	14,374	6,106	33,252	30,262
Poletimber	367,992	--	--	--	1,933	6,512	15,316	23,266
Sapling & seedling	53,541	--	1,677	1,419	4,983	12,680	4,940	11,292
All stands	809,255	--	1,677	1,419	21,290	25,298	53,508	64,820
Red pine								
Sawtimber	1,247,341	--	--	--	6,709	10,381	8,288	--
Poletimber	257,108	--	--	--	--	796	4,906	5,614
Sapling & seedling	49,545	790	702	--	9,183	7,614	9,425	--
All stands	1,553,994	790	702	--	15,892	18,791	22,619	5,614
White pine								
Sawtimber	1,329,387	--	3,600	1,198	30,725	6,433	24,229	9,210
Poletimber	86,177	--	--	--	--	--	2,120	--
Sapling & seedling	28,509	--	--	--	--	--	16,102	--
All stands	1,444,073	--	3,600	1,198	30,725	6,433	42,451	9,210
Balsam fir								
Sawtimber	431,236	--	--	--	--	14,233	62,424	13,586
Poletimber	308,334	--	--	1,114	--	2,572	13,103	9,473
Sapling & seedling	82,878	549	1,973	6,862	4,877	18,506	6,640	7,147
All stands	822,448	549	1,973	7,976	4,877	35,311	82,167	30,206
White spruce								
Sawtimber	177,558	--	--	--	--	--	--	7,211
Poletimber	36,803	--	--	--	--	--	--	--
Sapling & seedling	4,960	--	--	--	--	1,494	3,466	--
All stands	219,321	--	--	--	--	1,494	3,466	7,211
Black spruce								
Sawtimber	19,485	--	1,204	--	--	--	--	10,281
Poletimber	145,900	--	--	525	--	--	4,544	5,092
Sapling & seedling	35,072	--	--	2,504	--	11,410	3,002	503
All stands	200,457	--	1,204	3,029	--	11,410	7,546	15,876
Northern white-cedar								
Sawtimber	557,326	--	--	--	--	11,897	1,077	8,423
Poletimber	297,205	--	--	--	--	--	899	--
Sapling & seedling	19,213	--	--	2,150	417	5,210	1,621	--
All stands	873,744	--	--	2,150	417	17,107	3,597	8,423

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine							
Sawtimber	45,035	63,635	41,183	99,732	39,437	14,706	--
Poletimber	41,783	60,533	105,048	81,147	28,219	--	4,235
Sapling & seedling	15,341	1,209	--	--	--	--	--
All stands	102,159	125,377	146,231	180,879	67,656	14,706	4,235
Red pine							
Sawtimber	32,779	58,160	68,536	367,996	345,970	266,237	82,285
Poletimber	2,133	29,081	5,129	49,865	66,062	35,075	58,447
Sapling & seedling	4,792	7,269	--	7,872	1,898	--	--
All stands	39,704	94,510	73,665	425,733	413,930	301,312	140,732
White pine							
Sawtimber	49,576	71,666	67,142	324,999	307,876	224,685	208,048
Poletimber	6,021	11,153	8,200	15,385	33,842	9,456	--
Sapling & seedling	12,407	--	--	--	--	--	--
All stands	68,004	82,819	75,342	340,384	341,718	234,141	208,048
Balsam fir							
Sawtimber	30,992	30,773	28,625	79,046	126,374	18,028	27,155
Poletimber	9,342	27,345	8,360	43,262	113,858	50,250	29,655
Sapling & seedling	19,234	2,830	5,485	4,054	1,202	3,519	--
All stands	59,568	60,948	42,470	126,362	241,434	71,797	56,810
White spruce							
Sawtimber	--	--	--	--	--	71,875	98,472
Poletimber	--	5,385	2,579	3,330	13,869	11,640	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	5,385	2,579	3,330	13,869	83,515	98,472
Black spruce							
Sawtimber	--	--	--	--	8,000	--	--
Poletimber	8,923	6,419	81,671	10,665	28,061	--	--
Sapling & seedling	7,786	9,867	--	--	--	--	--
All stands	16,709	16,286	81,671	10,665	36,061	--	--
Northern white-cedar							
Sawtimber	23,350	21,553	11,505	29,866	122,098	137,097	190,460
Poletimber	7,896	9,028	4,530	67,892	24,754	110,682	71,524
Sapling & seedling	1,315	3,229	--	3,298	--	1,973	--
All stands	32,561	33,810	16,035	101,056	146,852	249,752	261,984

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70
Tamarack								
Sawtimber	38,022	--	1,439	8,099	--	4,586	4,413	4,509
Poletimber	58,373	--	1,397	878	--	2,204	4,578	5,684
Sapling & seedling	28,330	766	846	1,557	4,879	5,096	3,732	2,320
All stands	124,725	766	3,682	10,534	4,879	11,886	12,723	12,513
Oak-hickory								
Sawtimber	6,918,200	--	3,524	30,406	50,587	168,214	246,769	364,835
Poletimber	1,312,489	--	--	1,701	8,294	4,001	68,564	54,505
Sapling & seedling	351,917	966	9,499	43,729	48,577	47,233	78,755	39,412
All stands	8,582,606	966	13,023	75,836	107,458	219,448	394,088	458,752
Elm-ash-soft maple								
Sawtimber	1,819,357	--	4,816	24,116	29,904	47,110	110,654	54,561
Poletimber	739,519	--	675	8,157	17,946	21,573	49,311	43,250
Sapling & seedling	168,950	547	11,576	23,447	21,359	24,844	28,512	13,177
All stands	2,727,826	547	17,067	55,720	69,209	93,527	188,477	110,988
Maple-birch								
Sawtimber	8,596,273	--	--	14,290	15,429	103,271	151,095	185,941
Poletimber	3,367,547	--	--	2,183	10,549	32,527	60,191	88,949
Sapling & seedling	584,440	2,505	17,554	36,848	49,431	123,568	74,425	45,273
All stands	12,548,260	2,505	17,554	53,321	75,409	259,366	285,711	320,163
Aspen								
Sawtimber	1,632,601	--	2,559	14,061	19,218	38,396	82,959	75,286
Poletimber	1,929,362	--	2,015	11,413	10,245	70,409	87,446	114,285
Sapling & seedling	484,944	8,507	46,276	68,238	46,410	71,353	71,525	55,540
All stands	4,046,907	8,507	50,850	93,712	75,873	180,158	241,930	245,111
Paper birch								
Sawtimber	332,872	--	--	1,855	--	7,769	9,855	41,691
Poletimber	654,524	--	--	--	2,808	12,300	10,232	14,836
Sapling & seedling	63,887	1,176	2,597	5,490	3,409	8,412	14,263	11,963
All stands	1,051,283	1,176	2,597	7,345	6,217	28,481	34,350	68,490
Exotic								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
Nonstocked	30,514	5,086	4,634	2,135	2,440	750	5,274	4,075
All types								
Sawtimber	23,487,380	--	17,142	94,025	166,946	418,396	735,015	805,796
Poletimber	9,561,333	--	4,087	25,971	51,775	152,894	321,210	364,954
Sapling & seedling	1,956,186	15,806	92,700	192,244	193,525	337,420	316,408	186,627
Nonstocked	30,514	5,086	4,634	2,135	2,440	750	5,274	4,075
All stands	35,035,413	20,892	118,563	314,375	414,686	909,460	1,377,907	1,361,452

(Table 38 continued on next page)

(Table 38 continued)

Forest type and stand-size class	Basal-area class (square feet per acre)						
	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack							
Sawtimber	--	--	--	14,976	--	--	--
Poletimber	3,719	22,000	8,378	8,180	1,355	--	--
Sapling & seedling	4,340	2,187	2,607	--	--	--	--
All stands	8,059	24,187	10,985	23,156	1,355	--	--
Oak-hickory							
Sawtimber	588,208	831,157	609,591	1,852,013	1,562,289	543,475	67,132
Poletimber	109,998	163,993	173,335	314,428	287,636	108,037	17,997
Sapling & seedling	10,896	16,460	10,631	34,549	11,210	--	--
All stands	709,102	1,011,610	793,557	2,200,990	1,861,135	651,512	85,129
Elm-ash-soft maple							
Sawtimber	98,151	153,418	196,526	343,795	474,541	213,387	68,378
Poletimber	78,768	105,692	58,355	126,717	138,540	77,812	12,723
Sapling & seedling	5,154	11,588	10,081	9,552	9,113	--	--
All stands	182,073	270,698	264,962	480,064	622,194	291,199	81,101
Maple-birch							
Sawtimber	484,462	718,435	625,015	2,006,890	2,683,521	1,271,520	336,404
Poletimber	193,938	407,450	266,194	878,847	1,007,142	348,193	71,384
Sapling & seedling	51,354	71,952	23,620	67,987	10,646	9,277	--
All stands	729,754	1,197,837	914,829	2,953,724	3,701,309	1,628,990	407,788
Aspen							
Sawtimber	118,489	205,001	127,443	293,175	495,901	91,552	68,561
Poletimber	174,061	281,542	192,732	387,061	445,634	122,929	29,590
Sapling & seedling	59,567	22,987	18,053	15,392	1,096	--	--
All stands	352,117	509,530	338,228	695,628	942,631	214,481	98,151
Paper birch							
Sawtimber	23,844	37,335	9,318	67,684	61,028	43,927	28,566
Poletimber	48,473	46,924	42,394	130,581	230,731	104,593	10,652
Sapling & seedling	1,637	8,665	613	5,662	--	--	--
All stands	73,954	92,924	52,325	203,927	291,759	148,520	39,218
Exotic							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--
Nonstocked	3,439	--	2,681	--	--	--	--
All types							
Sawtimber	1,494,886	2,191,133	1,784,884	5,480,172	6,227,035	2,896,489	1,175,461
Poletimber	685,055	1,176,545	956,905	2,117,360	2,419,703	978,667	306,207
Sapling & seedling	193,823	158,243	71,090	148,366	35,165	14,769	--
Nonstocked	3,439	--	2,681	--	--	--	--
All stands	2,377,203	3,525,921	2,815,560	7,745,898	8,681,903	3,889,925	1,481,668

Table 39.--Net volume of sawtimber on commercial forest land by species group, log grade, and diameter class, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All grades					Log grade 1				
	Total	9.0-14.9	15.0-18.9	19.0-22.9	23.0+	Total	9.0-14.9	15.0-18.9	19.0-22.9	23.0+
Softwoods										
Jack pine	1,069,425	1,041,191	27,309	925	--	3,780	3,780	--	--	--
Red pine	1,997,086	1,340,116	433,658	187,608	35,704	64,843	12,219	39,906	12,718	--
White pine	2,666,253	783,469	743,711	566,428	572,645	205,803	2,592	32,067	85,893	85,251
White spruce	606,863	465,746	107,194	25,295	8,628	4,476	--	4,476	--	--
Black spruce	101,796	95,070	6,726	--	--	--	--	--	--	--
Balsam fir	1,031,536	943,798	86,664	1,074	--	--	--	--	--	--
Hemlock	1,130,685	452,852	349,424	192,081	136,328	74,073	--	14,509	34,367	25,197
Tamarack	193,864	178,221	13,785	1,858	--	--	--	--	--	--
Eastern redcedar	4,843	3,109	1,734	--	--	--	--	--	--	--
Northern white-cedar	1,118,865	973,457	122,875	18,901	3,632	4,557	--	2,020	2,537	--
Other softwoods	7,630	5,958	1,672	--	--	--	--	--	--	--
Total	9,928,846	6,282,987	1,894,752	994,170	756,937	357,532	18,591	92,978	135,515	110,448
Hardwoods										
White oak	2,230,778	1,012,001	657,378	331,263	230,136	56,890	--	16,636	30,047	10,207
Select red oak	4,555,263	1,912,753	1,361,552	729,244	551,714	418,422	--	160,285	112,794	145,343
Other red oak	1,817,970	873,490	561,446	236,715	146,319	18,558	--	16,478	2,080	--
Select hickory	272,089	194,200	62,182	12,938	2,769	--	--	--	--	--
Other hickory	86,411	72,661	11,355	1,207	1,188	--	--	--	--	--
Basswood	1,991,915	1,171,104	486,895	200,098	133,818	265,516	25,736	144,539	61,658	33,583
Beech	117,188	44,889	39,423	22,045	10,831	1,455	--	--	--	1,455
Yellow birch	561,730	240,829	198,844	77,766	44,291	61,055	--	22,734	21,033	17,288
Hard maple	3,384,420	1,461,876	1,027,583	539,247	355,714	319,532	--	137,234	106,482	75,816
Soft maple	1,859,236	1,123,886	431,551	171,553	132,246	114,351	--	51,794	17,176	45,381
Elm	1,182,708	580,563	356,184	128,054	117,907	101,281	--	58,369	10,486	32,426
Black ash	549,728	425,412	104,519	16,731	3,066	33,875	6,224	26,669	--	982
White & green ash	813,179	535,758	200,316	42,740	34,365	64,812	16,073	17,226	16,093	15,420
Cottonwood	130,777	42,787	18,279	18,532	51,179	16,835	--	2,384	5,091	9,360
Willow	84,501	26,091	35,513	12,268	10,629	--	--	--	--	--
Hackberry	8,473	6,641	--	--	1,832	--	--	--	--	--
Balsam poplar	99,922	61,442	21,861	14,850	1,769	7,315	--	3,458	3,857	--
Bigtooth aspen	1,385,402	1,085,357	271,267	24,726	4,052	10,932	--	7,735	3,197	--
Quaking aspen	2,655,293	2,198,720	424,171	30,610	1,792	26,055	--	21,985	4,070	--
Paper birch	791,454	699,478	86,023	5,182	771	5,271	--	5,271	--	--
River birch	19,495	9,433	4,088	4,914	1,060	--	--	--	--	--
Black cherry	262,572	199,789	48,103	10,594	4,086	4,925	--	4,925	--	--
Black walnut	84,770	55,062	21,598	6,905	1,205	--	--	--	--	--
Butternut	123,867	74,586	38,848	6,431	4,002	--	--	--	--	--
Other hardwoods	37,426	29,858	3,796	3,772	--	--	--	--	--	--
Total	25,106,567	14,138,666	6,472,775	2,648,385	1,846,741	1,527,080	48,033	697,722	394,064	387,261
All species	35,035,413	20,421,653	8,367,527	3,642,555	2,603,678	1,884,612	66,624	790,700	529,579	497,709

(Table 39 continued on next page)

[1/] International 1/4-inch rule.

(Table 39 continued)

Species group	Log grade 2					Log grades 3 & 4				
	Total	9.0-14.9	15.0-18.9	19.0-22.9	23.0+	Total	9.0-14.9	15.0-18.9	19.0-22.9	23.0+
Softwoods										
Jack pine	27,146	26,906	240	--	--	1,038,499	1,010,505	27,069	925	--
Red pine	95,068	30,674	30,432	26,670	7,292	1,837,175	1,297,223	363,320	148,220	28,412
White pine	454,000	106,799	138,165	89,994	119,042	2,006,450	674,078	573,479	390,541	368,352
White spruce	12,653	1,829	10,082	--	742	589,734	463,917	92,636	25,295	7,886
Black spruce	324	166	158	--	--	101,472	94,904	6,568	--	--
Balsam fir	6,663	2,820	3,843	--	--	1,024,873	940,978	82,821	1,074	--
Hemlock	147,258	32,254	52,597	33,219	29,188	909,354	420,598	282,318	124,495	81,943
Tamarack	367	367	--	--	--	193,497	177,854	13,785	1,858	--
Eastern redcedar	--	--	--	--	--	4,843	3,109	1,734	--	--
Northern white-cedar	28,145	15,773	12,178	194	--	1,086,163	957,684	108,677	16,170	3,632
Other softwoods	--	--	--	--	--	7,630	5,958	1,672	--	--
Total	771,624	217,588	247,695	150,077	156,264	8,799,690	6,046,808	1,554,079	708,578	490,225
Hardwoods										
White oak	459,433	131,142	190,242	74,504	63,545	1,714,455	880,859	450,500	226,712	156,384
Select red oak	930,702	237,784	351,348	192,929	148,641	3,206,139	1,674,969	849,919	423,521	257,730
Other red oak	267,435	56,245	98,616	34,786	77,788	1,531,977	817,245	446,352	199,849	68,531
Select hickory	40,050	28,234	11,593	137	86	232,039	165,966	50,589	12,801	2,683
Other hickory	6,124	5,472	547	--	105	80,287	67,189	10,808	1,207	1,083
Basswood	397,020	179,012	137,361	53,441	27,206	1,329,379	966,356	204,995	84,999	73,029
Beech	27,351	706	10,597	12,356	3,692	88,382	44,183	28,826	9,689	5,684
Yellow birch	130,303	30,683	69,121	18,754	11,745	370,372	210,146	106,989	37,979	15,258
Hard maple	745,211	176,671	318,442	177,681	72,417	2,319,677	1,285,205	571,907	255,084	207,481
Soft maple	292,513	93,621	141,297	31,898	25,697	1,452,372	1,030,265	238,460	122,479	61,168
Elm	295,671	70,766	130,212	62,817	31,876	785,756	509,797	167,603	54,751	53,605
Black ash	97,159	67,210	24,729	5,033	187	418,694	351,978	53,121	11,698	1,897
White & green ash	153,200	76,731	65,963	7,280	3,226	595,167	442,954	117,127	19,367	15,719
Cottonwood	10,986	684	4,211	2,438	3,653	102,956	42,103	11,684	11,003	38,166
Willow	12,566	55	1,860	8,044	2,607	71,935	26,036	33,653	4,224	8,022
Hackberry	162	--	--	--	162	8,311	6,641	--	--	1,670
Balsam poplar	22,301	12,218	6,633	3,450	--	70,306	49,224	11,770	7,543	1,769
Bigtooth aspen	158,992	74,943	82,210	1,839	--	1,215,478	1,010,414	181,322	19,690	4,052
Quaking aspen	222,059	128,902	90,495	2,662	--	2,407,179	2,069,818	311,691	23,878	1,792
Paper birch	74,531	44,773	29,758	--	--	711,652	654,705	50,994	5,182	771
River birch	43	43	--	--	--	19,452	9,390	4,088	4,914	1,060
Black cherry	40,951	27,365	9,500	--	4,086	216,696	172,424	33,678	10,594	--
Black walnut	--	--	--	--	--	84,770	55,062	21,598	6,905	1,205
Butternut	30,433	13,240	17,193	--	--	93,434	61,346	21,655	6,431	4,002
Other hardwoods	5,106	3,916	--	1,190	--	32,320	25,942	3,796	2,582	--
Total	4,420,302	1,460,416	1,791,928	691,239	476,719	19,159,185	12,630,217	3,983,125	1,563,082	982,761
All species	5,191,926	1,678,004	2,039,623	841,316	632,983	27,958,875	18,677,025	5,537,204	2,271,660	1,472,986

Table 40.--Net volume of short-log trees on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 9.0 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 28.9	29.0- 38.9	39.0+
Softwoods											
Jack pine	6,579	2,366	1,398	2,702	113	--	--	--	--	--	--
Red pine	380	208	--	--	--	172	--	--	--	--	--
White pine	11,024	2,077	1,881	1,108	377	1,136	721	906	1,937	881	--
White spruce	559	--	559	--	--	--	--	--	--	--	--
Black spruce	192	192	--	--	--	--	--	--	--	--	--
Balsam fir	1,381	664	152	267	298	--	--	--	--	--	--
Hemlock	6,026	752	975	1,347	795	873	953	--	189	142	--
Tamarack	620	--	222	398	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	7,677	2,670	3,326	842	622	217	--	--	--	--	--
Other softwoods	364	364	--	--	--	--	--	--	--	--	--
Total	34,802	9,293	8,513	6,664	2,205	2,398	1,674	906	2,126	1,023	--
Hardwoods											
White oak	65,306	--	7,154	14,606	11,879	7,994	5,661	6,790	7,911	2,745	566
Select red oak	58,301	--	3,066	11,502	11,285	6,586	6,304	6,518	8,738	4,302	--
Other red oak	67,482	--	6,350	13,935	15,690	11,717	6,269	4,776	7,802	783	160
Select hickory	4,065	--	867	1,022	1,818	358	--	--	--	--	--
Other hickory	1,319	--	1,068	251	--	--	--	--	--	--	--
Basswood	16,376	--	1,782	3,461	2,916	2,213	2,169	1,118	1,277	411	1,029
Beech	1,674	--	--	--	516	372	--	163	207	416	--
Yellow birch	11,098	--	2,216	2,608	2,111	1,705	610	484	1,263	101	--
Hard maple	47,409	--	5,773	10,329	8,977	7,525	4,266	3,583	4,294	2,662	--
Soft maple	34,851	--	4,666	6,279	5,901	4,896	3,179	2,772	3,415	2,280	1,463
Elm	23,935	--	3,432	4,859	5,725	2,407	2,325	1,249	2,145	1,793	--
Black ash	1,962	--	723	541	698	--	--	--	--	--	--
White & green ash	7,067	--	1,230	1,481	1,196	953	233	--	1,974	--	--
Cottonwood	1,311	--	156	233	--	--	188	--	473	--	261
Willow	2,891	--	194	379	545	202	211	416	683	261	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	327	--	--	--	--	327	--	--	--	--	--
Bigtooth aspen	7,574	--	2,065	2,965	1,029	1,294	221	--	--	--	--
Quaking aspen	11,740	--	5,192	5,113	1,096	229	110	--	--	--	--
Paper birch	8,418	--	3,578	3,175	1,151	--	403	111	--	--	--
River birch	645	--	--	--	365	--	280	--	--	--	--
Black cherry	6,276	--	393	2,650	1,955	138	211	467	462	--	--
Black walnut	798	--	200	--	--	278	320	--	--	--	--
Butternut	2,758	--	544	616	1,183	202	--	--	213	--	--
Other hardwoods	2,787	--	732	768	590	402	--	--	138	157	--
Total	386,370	--	51,381	86,773	76,626	49,798	32,960	28,447	40,995	15,911	3,479
All species	421,172	9,293	59,894	93,437	78,831	52,196	34,634	29,353	43,121	16,934	3,479

Table 41.--Net volume of short-log trees on commercial forest land by species group and diameter class, Wisconsin, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 28.9	29.0- 38.9	39.0+
Softwoods											
Jack pine	22,799	8,247	4,824	9,333	395	--	--	--	--	--	--
Red pine	1,562	870	--	--	--	692	--	--	--	--	--
White pine	37,451	5,440	5,725	3,627	1,330	4,111	2,690	3,433	7,545	3,550	--
White spruce	2,475	--	2,475	--	--	--	--	--	--	--	--
Black spruce	494	494	--	--	--	--	--	--	--	--	--
Balsam fir	3,581	1,536	402	752	891	--	--	--	--	--	--
Hemlock	14,712	1,462	2,209	3,273	2,011	2,287	2,547	--	521	402	--
Tamarack	2,689	--	949	1,740	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	26,332	8,764	11,515	2,987	2,256	810	--	--	--	--	--
Other softwoods	1,820	1,820	--	--	--	--	--	--	--	--	--
Total	113,915	28,633	28,099	21,712	6,883	7,900	5,237	3,433	8,066	3,952	--
Hardwoods											
White oak	171,428	--	20,570	39,369	31,174	20,426	14,323	17,140	20,030	6,936	1,460
Select red oak	131,261	--	6,730	25,331	25,074	14,693	14,203	14,854	20,220	10,156	--
Other red oak	153,963	--	14,384	31,486	35,468	26,621	14,379	11,059	18,291	1,878	397
Select hickory	11,078	--	2,476	2,910	4,745	947	--	--	--	--	--
Other hickory	3,609	--	2,958	651	--	--	--	--	--	--	--
Basswood	35,489	--	3,710	7,318	6,286	4,766	4,737	2,464	2,849	937	2,422
Beech	4,471	--	--	--	1,412	964	--	424	557	1,114	--
Yellow birch	26,014	--	4,545	5,781	4,988	4,197	1,548	1,256	3,414	285	--
Hard maple	115,456	--	13,184	24,288	21,599	18,420	10,659	9,106	11,104	7,096	--
Soft maple	93,064	--	14,042	17,639	15,705	12,585	8,138	7,003	8,567	5,706	3,679
Elm	60,674	--	8,363	11,912	14,276	6,116	6,012	3,284	5,754	4,957	--
Black ash	5,664	--	2,327	1,531	1,806	--	--	--	--	--	--
White & green ash	16,362	--	3,084	3,585	2,734	2,216	518	--	4,225	--	--
Cottonwood	4,191	--	474	692	--	--	574	--	1,538	--	913
Willow	8,857	--	559	1,076	1,599	616	646	1,306	2,195	860	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	799	--	--	--	--	799	--	--	--	--	--
Bigtooth aspen	12,280	--	3,210	4,770	1,710	2,210	380	--	--	--	--
Quaking aspen	26,071	--	11,019	11,609	2,603	564	276	--	--	--	--
Paper birch	22,989	--	9,672	8,573	3,240	--	1,173	331	--	--	--
River birch	2,121	--	--	--	1,190	--	931	--	--	--	--
Black cherry	16,526	--	1,159	7,182	5,029	347	546	1,132	1,131	--	--
Black walnut	2,088	--	573	--	--	722	793	--	--	--	--
Butternut	7,470	--	1,633	1,733	3,087	499	--	--	518	--	--
Other hardwoods	10,047	--	2,656	2,724	2,088	1,449	--	--	524	606	--
Total	941,972	--	127,328	210,160	185,813	119,157	79,836	69,359	100,917	40,531	8,871
All species	1,055,887	28,633	155,427	231,872	192,696	127,057	85,073	72,792	108,983	44,483	8,871

[1/] International 1/4-inch rule.

Table 42.--Net annual growth of growing stock on commercial forest land by softwoods and hardwoods, Wisconsin, 1967 and 1982

(In thousand cubic feet)

Species	1967[1/]	1982
Softwoods	114,676	142,663
Hardwoods	304,748	348,573
All species	419,424	491,236

[1/] Figures have been adjusted from those published after the 1968 survey to conform to 1982 volumes because of changes in survey definitions and procedures.

Table 43.--Net annual growth of growing stock on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	23,092	4,081	10,607	8,124	193	87
Red pine	43,977	13,113	8,768	15,411	4,659	2,026
White pine	16,876	5,033	4,234	6,226	508	875
White spruce	10,934	3,553	6,875	37	23	446
Black spruce	5,491	2,656	2,338	305	38	154
Balsam fir	22,338	9,621	11,877	773	3	64
Hemlock	2,840	1,900	466	375	--	99
Tamarack	2,041	1,004	796	240	--	1
Eastern redcedar	244	--	--	21	96	127
Northern white-cedar	14,647	7,818	3,560	1,068	--	2,201
Other softwoods	183	--	16	140	--	27
Total	142,663	48,779	49,537	32,720	5,520	6,107
Hardwoods						
White oak	11,453	133	1,287	2,950	5,072	2,011
Select red oak	34,507	5,502	10,720	8,337	8,644	1,304
Other red oak	15,934	-251	-194	10,830	4,184	1,365
Select hickory	2,876	--	--	113	1,927	836
Other hickory	3,233	492	210	285	1,909	337
Basswood	25,979	8,458	10,794	2,344	3,570	813
Beech	653	197	--	7	--	449
Yellow birch	2,673	807	1,174	454	38	200
Hard maple	46,806	20,074	18,495	3,318	3,102	1,817
Soft maple	51,605	12,592	22,289	12,334	2,740	1,650
Elm	-359	584	2,978	-1,059	-886	-1,976
Black ash	14,885	2,493	8,627	2,080	465	1,220
White & green ash	11,329	2,385	3,269	1,837	1,417	2,421
Cottonwood	1,008	398	--	38	474	98
Willow	536	35	4	17	191	289
Hackberry	102	--	--	--	87	15
Balsam poplar	733	450	198	-4	62	27
Bigtooth aspen	19,240	4,457	8,194	4,296	1,907	386
Quaking aspen	60,648	17,069	26,291	13,046	2,607	1,635
Paper birch	34,906	11,710	14,620	5,352	2,689	535
River birch	127	--	--	-12	139	--
Black cherry	6,300	1,757	562	581	2,221	1,179
Black walnut	611	--	--	6	438	167
Butternut	1,211	83	170	86	809	63
Other hardwoods	1,577	2	2	220	903	450
Total	348,573	89,427	129,690	67,456	44,709	17,291
All species	491,236	138,206	179,227	100,176	50,229	23,398

Table 44.--Net annual growth of sawtimber on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	71,795	14,570	32,952	23,196	951	126
Red pine	122,739	49,511	36,234	27,575	6,865	2,554
White pine	83,335	25,274	24,449	29,065	1,834	2,713
White spruce	39,075	12,294	25,900	157	--	724
Black spruce	4,577	3,105	1,324	148	--	--
Balsam fir	69,757	27,430	40,466	1,129	--	732
Hemlock	12,886	9,082	2,382	1,289	--	133
Tamarack	7,231	1,785	4,123	874	--	449
Eastern redcedar	251	--	--	85	105	61
Northern white-cedar	46,882	20,417	18,269	1,476	--	6,720
Other softwoods	413	--	99	314	--	--
Total	458,941	163,468	186,198	85,308	9,755	14,212
Hardwoods						
White oak	57,123	445	5,331	13,744	26,203	11,400
Select red oak	153,714	21,591	43,540	38,379	42,851	7,353
Other red oak	71,490	4,530	5,156	36,212	19,558	6,034
Select hickory	10,023	--	--	251	6,446	3,326
Other hickory	4,324	528	166	820	2,165	645
Basswood	88,496	26,460	36,516	7,683	15,119	2,718
Beech	1,679	162	--	1,198	--	319
Yellow birch	7,464	1,704	3,607	1,981	85	87
Hard maple	109,715	44,631	34,046	11,491	12,036	7,511
Soft maple	77,489	16,033	26,531	21,042	7,818	6,065
Elm	4,764	6,322	13,119	-2,676	-3,154	-8,847
Black ash	30,485	3,832	15,970	5,536	1,111	4,036
White & green ash	41,618	9,304	11,871	4,896	7,112	8,435
Cottonwood	4,266	1,776	--	140	2,143	207
Willow	2,258	132	16	-26	1,055	1,081
Hackberry	361	--	--	--	251	110
Balsam poplar	2,032	1,087	470	--	428	47
Bigtooth aspen	66,267	13,273	31,043	12,694	6,719	2,538
Quaking aspen	168,395	53,832	80,988	22,119	7,099	4,357
Paper birch	57,418	20,415	26,972	3,406	5,870	755
River birch	283	--	--	17	266	--
Black cherry	11,414	2,282	1,038	379	3,868	3,847
Black walnut	3,762	--	--	25	3,057	680
Butternut	6,428	715	723	1,682	3,200	108
Other hardwoods	2,810	9	--	884	1,631	286
Total	984,078	229,063	337,103	181,877	172,937	63,098
All species	1,443,019	392,531	523,301	267,185	182,692	77,310

[1/] International 1/4-inch rule

Table 45.--Net annual growth of growing stock on commercial forest land by species group and ownership class, Wisconsin, 1982

(In thousand cubic feet)

Species group	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Softwoods										
Jack pine	23,092	1,794	760	1,407	5,422	380	2,778	2,446	920	7,185
Red pine	43,977	4,741	408	2,357	8,023	472	3,154	5,072	2,742	17,008
White pine	16,876	1,305	344	930	1,509	1,327	972	3,922	740	5,827
White spruce	10,934	4,662	32	479	1,471	14	1,090	470	424	2,292
Black spruce	5,491	413	--	429	1,285	284	789	381	58	1,852
Balsam fir	22,338	-389	--	962	5,161	581	2,961	2,070	1,499	9,493
Hemlock	2,840	263	--	12	163	583	599	488	165	567
Tamarack	2,041	87	-1	230	318	-2	203	127	-15	1,094
Eastern redcedar	244	--	--	--	--	--	--	186	--	58
Northern white-cedar	14,647	1,508	--	403	1,709	845	1,242	3,295	397	5,248
Other softwoods	183	--	--	27	--	--	--	33	11	112
Total	142,663	14,384	1,543	7,236	25,061	4,484	13,788	18,490	6,941	50,736
Hardwoods										
White oak	11,453	87	22	398	630	39	74	6,121	468	3,614
Select red oak	34,507	2,550	319	854	4,206	829	1,328	12,327	1,291	10,803
Other red oak	15,934	2	562	441	638	39	251	6,035	854	7,112
Select hickory	2,876	--	--	4	--	--	13	1,934	176	749
Other hickory	3,233	18	--	35	51	91	120	2,202	193	523
Basswood	25,979	3,371	9	499	3,778	1,015	3,581	4,520	851	8,355
Beech	653	--	--	--	--	-8	24	43	10	584
Yellow birch	2,673	539	--	76	191	56	539	373	100	799
Hard maple	46,806	8,524	16	817	5,967	1,625	6,990	8,004	2,088	12,775
Soft maple	51,605	4,966	1,035	1,740	8,928	1,313	4,145	9,689	1,924	17,865
Elm	-359	-1,384	-434	-162	752	-85	626	-1,332	66	1,594
Black ash	14,885	1,951	58	774	2,374	4	1,340	2,543	396	5,445
White & green ash	11,329	578	68	221	733	208	970	4,747	470	3,334
Cottonwood	1,008	--	44	44	13	--	4	347	362	194
Willow	536	--	6	153	16	--	12	220	62	67
Hackberry	102	--	--	--	--	--	--	67	11	24
Balsam poplar	733	153	--	11	152	-5	15	77	51	279
Bigtooth aspen	19,240	3,090	198	450	2,829	635	705	3,872	785	6,676
Quaking aspen	60,648	6,328	525	2,500	11,581	808	4,081	11,112	2,449	21,264
Paper birch	34,906	2,300	166	1,613	6,482	956	3,264	6,568	1,778	11,779
River birch	127	--	-12	26	5	--	--	-1	82	27
Black cherry	6,300	385	--	292	372	-3	248	2,850	267	1,889
Black walnut	611	--	--	--	13	--	--	430	17	151
Butternut	1,211	24	--	8	-4	18	22	653	168	322
Other hardwoods	1,577	--	2	7	2	2	--	1,130	--	434
Total	348,573	33,482	2,584	10,801	49,709	7,537	28,352	84,531	14,919	116,658
All species	491,236	47,866	4,127	18,037	74,770	12,021	42,140	103,021	21,860	167,394

Table 46.--Net annual growth of sawtimber on commercial forest land by species group and ownership class, Wisconsin, 1982

(In thousand board feet)[1/]

Species group	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Softwoods										
Jack pine	71,795	6,640	2,472	5,122	10,515	1,403	9,161	8,887	4,146	23,449
Red pine	122,739	35,594	1,564	8,062	21,259	3,079	8,611	9,247	6,296	29,027
White pine	83,335	7,291	1,309	3,924	8,040	7,589	4,644	19,508	5,025	26,005
White spruce	39,075	14,289	81	1,630	7,187	61	4,302	2,180	1,371	7,974
Black spruce	4,577	693	--	-16	962	274	670	217	157	1,620
Balsam fir	69,757	8,191	--	3,150	16,908	1,129	11,364	3,710	4,254	21,051
Hemlock	12,886	1,398	--	78	871	2,587	3,070	1,978	851	2,053
Tamarack	7,231	142	16	972	1,951	50	244	1,107	284	2,465
Eastern redcedar	251	--	--	--	--	--	--	209	--	42
Northern white-cedar	46,882	6,841	--	1,609	5,556	2,183	7,627	8,277	2,095	12,694
Other softwoods	413	--	--	--	--	--	--	197	58	158
Total	458,941	81,079	5,442	24,531	73,249	18,355	49,693	55,517	24,537	126,538
Hardwoods										
White oak	57,123	--	108	1,509	1,345	133	312	35,506	1,607	16,603
Select red oak	153,714	6,849	664	3,923	14,592	5,019	5,194	60,932	7,491	49,050
Other red oak	71,490	--	816	2,730	6,255	511	1,216	25,393	3,699	30,870
Select hickory	10,023	--	--	26	--	--	--	5,764	1,325	2,908
Other hickory	4,324	27	--	114	8	165	79	2,023	124	1,784
Basswood	88,496	14,166	--	1,062	9,684	4,600	8,338	18,595	2,756	29,295
Beech	1,679	--	--	--	--	-10	83	626	37	943
Yellow birch	7,464	1,540	--	159	679	-194	2,029	1,124	-269	2,396
Hard maple	109,715	14,578	75	1,817	7,670	4,399	15,952	26,137	4,058	35,029
Soft maple	77,489	7,294	2,478	3,307	6,115	996	4,511	24,004	2,269	26,515
Elm	4,764	-609	-1,589	-882	1,949	-122	3,554	-4,051	-710	7,224
Black ash	30,485	459	74	1,100	7,680	-56	2,442	9,170	2,259	7,357
White & green ash	41,618	3,787	352	837	3,904	295	4,249	17,377	1,466	9,351
Cottonwood	4,266	--	461	108	69	--	21	1,432	1,334	841
Willow	2,258	--	28	221	38	--	56	559	350	1,006
Hackberry	361	--	--	--	--	--	--	251	--	110
Balsam poplar	2,032	83	--	9	444	-63	139	639	144	637
Bigtooth aspen	66,267	10,281	334	1,777	5,535	1,941	3,374	15,692	2,706	24,627
Quaking aspen	168,395	22,829	1,422	4,256	32,152	2,579	11,987	26,697	5,267	61,206
Paper birch	57,418	7,895	11	2,642	8,154	961	3,999	8,634	4,191	20,931
River birch	283	--	22	38	--	--	--	163	-60	120
Black cherry	11,414	603	--	215	563	147	479	5,744	721	2,942
Black walnut	3,762	--	--	--	1,295	--	--	1,727	94	646
Butternut	6,428	281	--	34	19	122	332	3,330	1,651	659
Other hardwoods	2,810	--	--	25	16	9	--	857	--	1,903
Total	984,078	90,063	5,256	25,027	108,166	21,432	68,346	288,325	42,510	334,953
All species	1,443,019	171,142	10,698	49,558	181,415	39,787	118,039	343,842	67,047	461,491

[1/] International 1/4-inch rule

Table 47.--Net annual growth of growing stock on commercial forest land by species group and forest type, Wisconsin, 1982

(In thousand cubic feet)

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
Softwoods								
Jack pine	23,092	16,478	864	423	1	--	-11	30
Red pine	43,977	1,937	35,797	1,556	366	27	82	3
White pine	16,876	324	1,338	6,845	389	52	113	71
White spruce	10,934	--	130	69	1,367	4,579	25	130
Black spruce	5,491	20	76	25	640	1	2,965	417
Balsam fir	22,338	7	182	124	5,134	94	928	761
Hemlock	2,840	--	7	51	16	3	27	81
Tamarack	2,041	--	--	-10	59	--	48	224
Eastern redcedar	244	8	--	--	--	--	--	--
Northern white-cedar	14,647	--	22	26	1,373	44	237	8,880
Other softwoods	183	--	82	38	--	--	--	--
Total	142,663	18,774	38,498	9,147	9,345	4,800	4,414	10,597
Hardwoods								
White oak	11,453	8	10	48	1	--	--	--
Select red oak	34,507	108	165	68	13	--	24	6
Other red oak	15,934	382	-13	176	-14	--	--	4
Select hickory	2,876	--	--	22	--	--	--	13
Other hickory	3,233	--	--	--	--	--	--	9
Basswood	25,979	2	2	10	4	19	--	29
Beech	653	--	-3	--	--	--	--	--
Yellow birch	2,673	--	--	-11	-28	--	4	163
Hard maple	46,806	--	74	31	58	8	7	7
Soft maple	51,605	15	149	502	401	13	39	31
Elm	-359	13	98	-58	36	-3	--	-173
Black ash	14,885	--	--	19	770	3	--	652
White & green ash	11,329	--	51	--	6	30	--	8
Cottonwood	1,008	9	--	329	--	--	--	--
Willow	536	--	--	--	--	--	--	8
Hackberry	102	--	--	--	--	--	--	--
Balsam poplar	733	--	--	--	43	11	7	-14
Bigtooth aspen	19,240	340	84	213	41	4	-32	41
Quaking aspen	60,648	310	584	1,310	385	439	629	72
Paper birch	34,906	92	141	216	572	7	89	407
River birch	127	--	--	--	--	--	--	--
Black cherry	6,300	--	8	80	13	3	149	--
Black walnut	611	--	--	--	--	--	--	--
Butternut	1,211	--	--	--	--	--	--	--
Other hardwoods	1,577	--	12	--	--	--	--	--
Total	348,573	1,279	1,362	2,955	2,301	534	916	1,263
All species	491,236	20,053	39,860	12,102	11,646	5,334	5,330	11,860

(Table 47 continued on next page)

(Table 47 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Softwoods								
Jack pine	17	2,976	9	267	1,883	63	--	92
Red pine	10	1,200	20	767	1,830	374	--	8
White pine	243	1,419	769	3,221	1,570	501	--	21
White spruce	20	122	369	918	2,633	564	--	8
Black spruce	497	--	74	143	500	119	--	14
Balsam fir	587	62	2,296	3,866	6,795	1,497	--	5
Hemlock	-5	17	284	2,232	108	19	--	--
Tamarack	1,501	5	41	-6	120	28	--	31
Eastern redcedar	--	130	80	26	--	--	--	--
Northern white-cedar	52	9	1,740	1,479	521	264	--	--
Other softwoods	--	20	--	5	--	--	38	--
Total	2,922	5,960	5,682	12,918	15,960	3,429	38	179
Hardwoods								
White oak	--	8,884	431	1,315	543	181	--	32
Select red oak	-3	21,369	356	7,343	3,708	1,337	--	13
Other red oak	--	13,624	240	729	739	8	--	59
Select hickory	--	2,345	2	362	13	119	--	--
Other hickory	--	1,578	23	1,479	144	--	--	--
Basswood	--	2,224	1,191	21,094	1,138	240	--	26
Beech	--	8	11	637	--	--	--	--
Yellow birch	5	18	272	2,061	131	58	--	--
Hard maple	5	1,438	624	40,818	3,087	582	--	67
Soft maple	207	3,926	9,965	21,193	12,388	2,773	--	3
Elm	18	-385	-1,017	731	477	109	--	-205
Black ash	20	163	8,864	2,524	1,673	161	--	36
White & green ash	--	1,020	2,400	7,152	508	147	--	7
Cottonwood	--	167	249	112	138	4	--	--
Willow	--	--	344	77	85	15	--	7
Hackberry	--	24	30	48	--	--	--	--
Balsam poplar	-9	44	94	-17	499	75	--	--
Bigtooth aspen	338	2,362	67	2,706	12,526	550	--	--
Quaking aspen	273	2,334	1,613	6,647	44,027	1,983	--	42
Paper birch	153	3,550	928	5,214	11,205	12,257	--	75
River birch	--	3	124	--	--	--	--	--
Black cherry	1	2,037	68	2,550	1,260	131	--	--
Black walnut	--	483	--	116	--	--	--	12
Butternut	--	501	4	653	38	10	--	5
Other hardwoods	--	311	465	625	158	6	--	--
Total	1,008	68,028	27,348	126,169	94,485	20,746	--	179
All species	3,930	73,988	33,030	139,087	110,445	24,175	38	358

Table 48.--Net annual growth of sawtimber on commercial forest land by species group and forest type, Wisconsin, 1982

(In thousand board feet)[1/]

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
Softwoods								
Jack pine	71,795	46,252	3,104	1,127	12	--	-72	--
Red pine	122,739	4,205	92,046	5,343	1,830	--	1,107	14
White pine	83,335	1,879	5,520	31,684	2,139	310	311	126
White spruce	39,075	--	575	552	5,356	14,550	120	512
Black spruce	4,577	487	--	-109	839	59	1,159	1,047
Balsam fir	69,757	--	758	514	22,458	318	3,768	1,437
Hemlock	12,886	--	35	341	102	15	158	297
Tamarack	7,231	--	--	210	509	--	35	679
Eastern redcedar	251	85	--	--	--	--	--	--
Northern white-cedar	46,882	--	68	89	4,924	--	726	23,926
Other softwoods	413	--	314	99	--	--	--	--
Total	458,941	52,908	102,420	39,850	38,169	15,252	7,312	28,038
Hardwoods								
White oak	57,123	--	96	129	--	--	--	9
Select red oak	153,714	324	269	202	57	--	75	31
Other red oak	71,490	1,413	561	564	--	--	-3	22
Select hickory	10,023	--	--	--	--	--	--	76
Other hickory	4,324	--	--	--	--	--	--	25
Basswood	88,496	--	12	-6	23	--	--	150
Beech	1,679	--	1,079	--	--	--	--	--
Yellow birch	7,464	--	3	-80	-122	--	21	18
Hard maple	109,715	--	898	156	134	33	6	89
Soft maple	77,489	--	1	428	205	95	97	-133
Elm	4,764	104	--	-43	210	-11	--	-516
Black ash	30,485	--	--	149	1,943	11	--	-9
White & green ash	41,618	--	676	--	--	--	--	33
Cottonwood	4,266	--	--	1,311	--	--	--	--
Willow	2,258	--	--	--	--	--	--	37
Hackberry	361	--	--	--	--	--	--	--
Balsam poplar	2,032	--	--	--	8	50	--	-61
Bigtooth aspen	66,267	454	262	283	18	--	-102	59
Quaking aspen	168,395	533	2,037	2,094	3,015	960	1,276	1,199
Paper birch	57,418	97	577	661	2,595	--	194	411
River birch	283	--	--	--	--	--	--	--
Black cherry	11,414	--	6	--	131	94	--	--
Black walnut	3,762	--	--	--	--	--	--	--
Butternut	6,428	--	--	--	--	--	--	--
Other hardwoods	2,810	--	66	--	--	--	--	--
Total	984,078	2,925	6,543	5,848	8,217	1,232	1,564	1,440
All species	1,443,019	55,833	108,963	45,698	46,386	16,484	8,876	29,478

(Table 48 continued on next page)

[1/] International 1/4-inch rule

(Table 48 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Softwoods								
Jack pine	--	10,893	119	719	9,196	276	--	169
Red pine	54	2,914	117	3,980	8,575	2,509	--	45
White pine	1,277	7,414	3,822	17,525	8,289	2,651	--	388
White spruce	70	--	2,030	5,031	8,242	1,992	--	45
Black spruce	359	--	245	103	281	19	--	88
Balsam fir	106	78	5,772	11,490	19,560	3,498	--	--
Hemlock	-20	92	920	10,344	509	93	--	--
Tamarack	2,134	38	1,108	173	1,500	119	--	726
Eastern redcedar	--	61	--	105	--	--	--	--
Northern white-cedar	590	--	7,685	6,034	2,082	758	--	--
Other softwoods	--	--	--	--	--	--	--	--
Total	4,570	21,490	21,818	55,504	58,234	11,915	--	1,461
Hardwoods								
White oak	--	44,011	1,327	8,284	1,531	1,669	--	67
Select red oak	15	95,484	1,916	35,214	14,370	5,691	--	66
Other red oak	--	56,148	1,652	3,791	6,853	301	--	188
Select hickory	--	8,588	9	1,046	--	304	--	--
Other hickory	--	2,405	--	1,871	23	--	--	--
Basswood	--	7,563	3,157	74,658	2,458	434	--	47
Beech	--	--	15	585	--	--	--	--
Yellow birch	--	65	1,045	6,488	-28	54	--	--
Hard maple	--	3,567	829	102,064	1,557	382	--	--
Soft maple	143	5,908	24,054	36,788	7,665	2,238	--	--
Elm	82	69	-3,841	7,217	2,349	-98	--	-758
Black ash	--	502	20,670	5,585	1,316	318	--	--
White & green ash	--	3,956	11,115	23,274	2,017	517	--	30
Cottonwood	--	689	1,391	489	367	19	--	--
Willow	--	--	1,633	390	103	66	--	29
Hackberry	--	110	156	95	--	--	--	--
Balsam poplar	--	298	155	19	1,455	108	--	--
Bigtooth aspen	2	8,224	492	7,785	45,956	2,834	--	--
Quaking aspen	153	8,193	5,020	31,866	105,096	6,367	--	586
Paper birch	141	4,491	3,612	15,402	14,594	14,643	--	--
River birch	--	89	194	--	--	--	--	--
Black cherry	--	3,274	16	6,405	1,318	170	--	--
Black walnut	--	2,196	--	1,537	--	--	--	29
Butternut	--	2,685	19	3,388	336	--	--	--
Other hardwoods	--	314	2,143	245	42	--	--	--
Total	536	258,829	76,779	374,486	209,378	36,017	--	284
All species	5,106	280,319	98,597	429,990	267,612	47,932	--	1,745

Table 49.--Net annual growth of growing stock on commercial forest land by forest type and stand-age class, Wisconsin, 1982

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	20,053	485	3,194	3,115	5,324	5,383	1,803	304	370	75	--	--	--	--
Red pine	39,860	304	8,559	13,142	9,899	4,548	1,902	360	379	348	295	124	--	--
White pine	12,102	210	693	832	1,460	1,657	885	1,604	1,610	1,311	94	915	298	533
Balsam fir	11,646	1,215	822	1,319	-18	2,205	3,181	2,011	303	270	62	299	-19	-4
White spruce	5,334	12	275	2,012	1,451	482	985	117	--	--	--	--	--	--
Black spruce	5,330	338	590	428	600	653	364	240	1,439	419	190	--	69	--
Northern white-cedar	11,860	194	442	312	355	2,028	1,592	1,937	948	1,247	920	604	536	745
Tamarack	3,930	153	311	485	162	1,063	426	620	486	124	--	44	15	41
Oak-hickory	73,988	3,709	1,855	2,245	4,412	11,944	14,932	7,368	7,621	6,715	3,926	4,515	3,153	1,593
Elm-ash-soft maple	33,030	1,751	2,068	2,515	5,159	5,767	4,184	3,676	3,475	1,641	1,216	922	494	162
Maple-birch	139,087	5,348	6,453	7,152	13,337	29,100	26,938	18,580	7,628	7,917	5,957	5,677	2,420	2,580
Aspen	110,445	14,226	8,272	11,786	20,661	29,972	16,309	5,719	2,150	1,209	141	--	--	--
Paper birch	24,175	962	2,204	2,556	3,918	5,636	5,030	2,929	664	74	9	193	--	--
Exotic	38	--	38	--	--	--	--	--	--	--	--	--	--	--
Nonstocked	358	358	--	--	--	--	--	--	--	--	--	--	--	--
All types	491,236	29,265	35,776	47,899	66,720	100,438	78,531	45,465	27,073	21,350	12,810	13,293	6,966	5,650

Table 50.--Net annual growth of sawtimber on commercial forest land by forest type and stand-age class, Wisconsin, 1982

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	55,833	2,892	1,984	1,279	9,958	22,981	12,407	1,687	2,009	636	--	--	--	--
Red pine	108,963	1,339	4,000	20,933	37,056	25,939	10,998	1,749	2,219	2,373	1,720	637	--	--
White pine	45,698	851	111	2,701	2,435	5,814	4,091	5,956	8,017	6,602	643	3,554	1,915	3,008
Balsam fir	46,386	1,880	867	2,481	2,861	9,516	13,754	9,890	751	1,381	497	2,084	250	174
White spruce	16,484	--	327	1,883	7,231	2,424	3,811	808	--	--	--	--	--	--
Black spruce	8,876	100	504	191	205	998	275	516	5,533	541	-21	--	34	--
Northern white-cedar	29,478	210	229	1,251	223	6,390	2,610	2,541	1,657	2,099	4,049	2,377	2,890	2,952
Tamarack	5,106	380	249	123	135	429	436	1,116	1,212	735	--	129	97	65
Oak-hickory	280,319	14,643	4,587	2,585	10,141	27,331	51,130	32,660	39,440	28,531	24,538	22,798	15,265	6,670
Elm-ash-soft maple	98,597	9,790	3,452	2,382	9,270	12,282	11,924	12,165	12,463	12,588	5,431	3,958	2,112	780
Maple-birch	429,990	12,019	12,180	12,821	27,727	56,470	80,764	74,635	35,082	38,865	29,691	27,439	11,011	11,286
Aspen	267,612	36,978	12,707	16,539	41,840	64,640	52,491	21,021	13,992	5,933	1,471	--	--	--
Paper birch	47,932	1,757	1,626	1,337	7,376	10,681	14,400	8,301	1,840	342	77	195	--	--
Exotic	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nonstocked	1,745	1,745	--	--	--	--	--	--	--	--	--	--	--	--
All types	1,443,019	84,584	42,823	66,506	156,458	245,895	259,091	173,045	124,215	100,626	68,096	63,171	33,574	24,935

[1/] International 1/4-inch rule.

Table 51.--Net annual growth of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1982

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	3,125	--	--	--	214	77	374	274	308	455	275	794	245	109	--
Poletimber	12,065	--	--	--	185	855	581	955	1,493	2,106	2,896	1,663	1,017	121	193
Sapling & seedling	4,863	15	18	398	282	321	313	738	2,616	162	--	--	--	--	--
All stands	20,053	15	18	398	681	1,253	1,268	1,967	4,417	2,723	3,171	2,457	1,262	230	193
Red pine															
Sawtimber	10,434	--	--	--	70	71	88	--	649	749	732	3,291	2,415	2,017	352
Poletimber	26,464	--	--	--	--	16	231	272	955	2,753	1,022	5,055	5,846	4,069	6,245
Sapling & seedling	2,962	-20	182	8	199	65	587	--	566	142	140	453	640	--	--
All stands	39,860	-20	182	8	269	152	906	272	2,170	3,644	1,894	8,799	8,901	6,086	6,597
White pine															
Sawtimber	8,433	--	43	9	244	38	171	76	269	631	479	2,553	2,304	1,063	553
Poletimber	3,182	--	--	--	--	--	121	--	182	200	435	1,229	612	403	--
Sapling & seedling	487	--	--	--	--	30	121	--	336	--	--	--	--	--	--
All stands	12,102	--	43	9	244	68	413	76	787	831	914	3,782	2,916	1,466	553
Balsam fir															
Sawtimber	2,915	--	--	--	--	204	32	111	-72	330	265	643	982	186	234
Poletimber	5,825	--	--	19	--	38	-1,045	670	348	897	196	755	1,968	1,256	723
Sapling & seedling	2,906	58	76	201	87	383	264	430	697	55	361	203	47	44	--
All stands	11,646	58	76	220	87	625	-749	1,211	973	1,282	822	1,601	2,997	1,486	957
White spruce															
Sawtimber	2,440	--	--	--	--	--	--	195	--	--	--	--	--	1,170	1,075
Poletimber	2,752	--	--	--	--	--	--	--	--	156	288	143	1,921	244	--
Sapling & seedling	142	--	--	12	--	9	111	--	10	--	--	--	--	--	--
All stands	5,334	--	--	12	--	9	111	195	10	156	288	143	1,921	1,414	1,075
Black spruce															
Sawtimber	165	--	69	--	--	--	--	40	--	--	--	--	56	--	--
Poletimber	3,349	--	--	26	--	--	203	361	292	255	1,077	289	730	116	--
Sapling & seedling	1,816	86	30	175	129	63	79	469	172	407	68	72	66	--	--
All stands	5,330	86	99	201	129	63	282	870	464	662	1,145	361	852	116	--
Northern white-cedar															
Sawtimber	3,150	--	--	--	--	20	1	59	128	130	53	274	976	634	875
Poletimber	7,524	--	--	--	--	--	174	--	212	366	94	1,942	1,036	2,101	1,599
Sapling & seedling	1,186	--	-3	88	11	134	52	--	195	44	--	450	--	215	--
All stands	11,860	--	-3	88	11	154	227	59	535	540	147	2,666	2,012	2,950	2,474

(Table 51 continued on next page)

(Table 51 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	237	--	11	66	--	23	23	15	--	--	--	99	--	--	--
Poletimber	2,726	--	11	11	17	164	166	838	18	659	227	643	-28	--	--
Sapling & seedling	967	5	15	152	122	178	110	38	223	24	100	--	--	--	--
All stands	3,930	5	37	229	139	365	299	891	241	683	327	742	-28	--	--
Oak-hickory															
Sawtimber	38,040	--	-36	160	130	1,091	1,328	1,956	3,653	5,122	3,191	10,315	8,526	2,183	421
Poletimber	29,673	--	--	5	208	208	1,888	1,130	3,183	4,169	3,845	6,811	5,061	2,755	410
Sapling & seedling	6,275	--	327	688	701	1,246	1,244	764	227	642	169	145	122	--	--
All stands	73,988	--	291	853	1,039	2,545	4,460	3,850	7,063	9,933	7,205	17,271	13,709	4,938	831
Elm-ash-soft maple															
Sawtimber	9,137	--	14	116	163	239	779	288	241	1,312	693	1,494	2,419	1,220	159
Poletimber	19,056	--	353	237	295	697	1,701	1,198	1,775	2,616	1,511	3,801	3,081	1,729	62
Sapling & seedling	4,837	-94	191	399	518	887	1,228	455	437	387	331	14	84	--	--
All stands	33,030	-94	558	752	976	1,823	3,708	1,941	2,453	4,315	2,535	5,309	5,584	2,949	221
Maple-birch															
Sawtimber	47,603	--	--	370	142	405	1,432	1,636	2,691	3,795	3,227	10,895	15,863	5,901	1,246
Poletimber	77,532	--	--	215	289	996	2,339	2,439	6,091	9,995	6,816	21,149	19,092	6,934	1,177
Sapling & seedling	13,952	84	1,049	835	1,050	1,764	2,545	1,400	1,885	1,439	666	915	128	192	--
All stands	139,087	84	1,049	1,420	1,481	3,165	6,316	5,475	10,667	15,229	10,709	32,959	35,083	13,027	2,423
Aspen															
Sawtimber	13,758	--	19	105	98	184	425	637	1,267	1,849	1,280	2,727	3,554	1,049	564
Poletimber	69,200	--	487	329	484	2,508	5,290	4,882	5,920	9,766	7,996	13,707	13,102	4,089	640
Sapling & seedling	27,487	2,193	1,291	2,638	3,740	5,050	4,708	2,201	2,552	1,896	822	324	22	50	--
All stands	110,445	2,193	1,797	3,072	4,322	7,742	10,423	7,720	9,739	13,511	10,098	16,758	16,678	5,188	1,204
Paper birch															
Sawtimber	2,646	--	--	14	--	212	67	276	316	276	131	522	535	179	118
Poletimber	17,601	--	--	52	158	527	923	337	1,134	1,316	1,030	4,016	5,853	2,015	240
Sapling & seedling	3,928	-20	192	340	207	745	865	231	167	315	412	363	111	--	--
All stands	24,175	-20	192	406	365	1,484	1,855	844	1,617	1,907	1,573	4,901	6,499	2,194	358
Exotic															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	38	--	--	--	--	--	--	--	38	--	--	--	--	--	--
All stands	38	--	--	--	--	--	--	--	38	--	--	--	--	--	--
Nonstocked	358	85	6	17	11	31	72	35	9	--	29	16	47	--	--
All types															
Sawtimber	142,083	--	120	840	1,061	2,564	4,720	5,563	9,450	14,649	10,326	33,607	37,875	15,711	5,597
Poletimber	276,949	--	851	894	1,636	6,009	12,572	13,082	21,603	35,254	27,433	61,203	59,291	25,832	11,289
Sapling & seedling	71,846	2,307	3,368	5,934	7,046	10,875	12,227	6,726	10,121	5,513	3,069	2,939	1,220	501	--
Nonstocked	358	85	6	17	11	31	72	35	9	--	29	16	47	--	--
All stands	491,236	2,392	4,345	7,685	9,754	19,479	29,591	25,406	41,183	55,416	40,857	97,765	98,433	42,044	16,886

Table 52.--Net annual growth of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1982

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	22,077	--	--	--	1,314	233	2,089	3,595	3,171	3,051	1,934	4,552	1,698	440	--
Poletimber	28,075	--	--	--	104	805	2,033	2,213	2,033	5,311	7,035	6,668	1,571	--	302
Sapling & seedling	5,681	47	69	57	685	1,396	660	917	1,757	93	--	--	--	--	--
All stands	55,833	47	69	57	2,103	2,434	4,782	6,725	6,961	8,455	8,969	11,220	3,269	440	302
Red pine															
Sawtimber	73,238	--	--	--	470	501	471	--	4,053	3,609	9,889	21,785	17,370	13,029	2,061
Poletimber	32,612	--	--	--	--	53	465	600	43	2,855	219	6,618	12,819	1,921	7,019
Sapling & seedling	3,113	75	38	--	898	342	429	--	428	336	--	500	67	--	--
All stands	108,963	75	38	--	1,368	896	1,365	600	4,524	6,800	10,108	28,903	30,256	14,950	9,080
White pine															
Sawtimber	40,062	--	240	80	1,538	223	915	413	1,452	3,043	1,788	11,867	9,569	5,666	3,268
Poletimber	4,709	--	--	--	--	--	133	--	583	518	272	592	1,944	667	--
Sapling & seedling	927	--	--	--	--	--	578	--	349	--	--	--	--	--	--
All stands	45,698	--	240	80	1,538	223	1,626	413	2,384	3,561	2,060	12,459	11,513	6,333	3,268
Balsam fir															
Sawtimber	20,490	--	--	--	--	1,977	3,444	740	902	1,590	1,025	3,282	6,371	604	555
Poletimber	21,982	--	--	86	--	55	970	206	427	3,267	1,595	1,235	10,347	2,832	962
Sapling & seedling	3,914	226	34	426	201	1,053	-8	618	648	104	297	106	8	201	--
All stands	46,386	226	34	512	201	3,085	4,406	1,564	1,977	4,961	2,917	4,623	16,726	3,637	1,517
White spruce															
Sawtimber	13,153	--	--	--	--	--	--	718	--	--	--	--	--	5,811	6,624
Poletimber	3,098	--	--	--	--	--	--	--	--	346	196	94	1,883	579	--
Sapling & seedling	233	--	--	--	--	46	187	--	--	--	--	--	--	--	--
All stands	16,484	--	--	--	--	46	187	718	--	346	196	94	1,883	6,390	6,624
Black spruce															
Sawtimber	490	--	34	--	--	--	--	141	--	--	--	--	315	--	--
Poletimber	7,557	--	--	38	--	--	157	643	206	338	4,396	512	1,267	--	--
Sapling & seedling	829	--	--	45	--	251	155	8	18	352	--	--	--	--	--
All stands	8,876	--	34	83	--	251	312	792	224	690	4,396	512	1,582	--	--
Northern white-cedar															
Sawtimber	14,221	--	--	--	--	233	-7	432	684	187	236	1,086	4,764	3,857	2,749
Poletimber	14,628	--	--	--	--	--	479	--	326	410	101	6,758	630	4,443	1,481
Sapling & seedling	629	--	--	143	12	110	7	--	94	90	--	50	--	123	--
All stands	29,478	--	--	143	12	343	479	432	1,104	687	337	7,894	5,394	8,423	4,230

(Table 52 continued on next page)

[1/] International 1/4-inch rule.

(Table 52 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	1,116	--	68	244	--	133	159	97	--	--	--	415	--	--	--
Poletimber	3,115	--	100	22	--	399	283	247	266	703	382	742	-29	--	--
Sapling & seedling	875	11	14	63	102	295	140	117	1	60	72	--	--	--	--
All stands	5,106	11	182	329	102	827	582	461	267	763	454	1,157	-29	--	--
Oak-hickory															
Sawtimber	195,961	--	-167	866	1,948	5,076	5,729	13,473	21,738	24,204	17,326	54,114	39,292	10,625	1,737
Poletimber	63,344	--	--	37	519	140	3,460	2,451	5,828	8,652	8,508	16,669	11,039	4,992	1,049
Sapling & seedling	21,014	284	1,194	3,497	4,580	2,344	4,588	1,440	953	734	305	789	306	--	--
All stands	280,319	284	1,027	4,400	7,047	7,560	13,777	17,364	28,519	33,590	26,139	71,572	50,637	15,617	2,786
Elm-ash-soft maple															
Sawtimber	51,442	--	15	392	569	1,779	4,048	2,760	2,348	4,964	4,835	8,557	14,701	5,557	917
Poletimber	32,586	--	-72	278	500	313	2,160	3,957	3,827	6,069	2,692	5,396	5,150	1,960	356
Sapling & seedling	14,569	110	1,435	985	3,415	2,048	2,180	532	1,192	217	1,305	945	205	--	--
All stands	98,597	110	1,378	1,655	4,484	4,140	8,388	7,249	7,367	11,250	8,832	14,898	20,056	7,517	1,273
Maple-birch															
Sawtimber	238,197	--	--	1,195	601	3,267	5,546	8,243	12,935	21,855	19,481	56,862	77,016	25,632	5,564
Poletimber	160,178	--	--	303	505	754	6,437	4,565	9,765	21,390	15,459	42,297	45,151	11,624	1,928
Sapling & seedling	31,615	161	1,949	2,352	2,397	6,242	5,958	2,067	1,687	3,164	1,867	3,068	364	339	--
All stands	429,990	161	1,949	3,850	3,503	10,263	17,941	14,875	24,387	46,409	36,807	102,227	122,531	37,595	7,492
Aspen															
Sawtimber	80,087	--	79	903	1,371	1,640	5,077	4,426	6,712	14,158	6,839	14,522	17,671	3,687	3,002
Poletimber	134,742	--	93	652	1,304	4,573	8,472	9,174	15,596	22,219	13,548	25,339	27,395	4,815	1,562
Sapling & seedling	52,783	6,701	6,339	7,612	5,653	9,074	5,504	4,319	5,112	1,006	644	803	16	--	--
All stands	267,612	6,701	6,511	9,167	8,328	15,287	19,053	17,919	27,420	37,383	21,031	40,664	45,082	8,502	4,564
Paper birch															
Sawtimber	12,247	--	--	97	--	354	342	1,626	731	1,312	563	2,748	2,456	1,294	724
Poletimber	31,789	--	--	--	278	732	918	682	2,422	2,966	1,846	6,728	10,331	4,249	637
Sapling & seedling	3,896	675	-43	549	715	361	537	474	34	456	11	127	--	--	--
All stands	47,932	675	-43	646	993	1,447	1,797	2,782	3,187	4,734	2,420	9,603	12,787	5,543	1,361
Exotic															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nonstocked	1,745	845	281	75	434	22	-57	88	66	--	-9	--	--	--	--
All types															
Sawtimber	762,781	--	269	3,777	7,811	15,416	27,813	36,664	54,726	77,973	63,916	179,790	191,223	76,202	27,201
Poletimber	538,415	--	121	1,416	3,210	7,824	25,967	24,738	41,322	75,044	56,249	119,648	129,498	38,082	15,296
Sapling & seedling	140,078	8,290	11,029	15,729	18,658	23,562	20,915	10,492	12,273	6,612	4,501	6,388	966	663	--
Nonstocked	1,745	845	281	75	434	22	-57	88	66	--	-9	--	--	--	--
All stands	1,443,019	9,135	11,700	20,997	30,113	46,824	74,638	71,982	108,387	159,629	124,657	305,826	321,687	114,947	42,497

Table 53.--Timber removals from growing stock on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	14,552	3,216	6,263	4,740	315	18
Red pine	16,502	5,143	4,150	5,405	1,648	156
White pine	7,967	3,073	2,104	2,454	230	106
White spruce	1,976	1,235	741	--	--	1/
Black spruce	1,235	875	323	37	--	--
Balsam fir	9,351	6,388	2,921	41	--	1
Hemlock	4,839	3,871	743	189	--	36
Tamarack	545	125	323	96	--	1
Northern white-cedar	2,421	834	1,018	29	--	540
Other softwoods	--	--	--	--	--	--
Total	59,388	24,760	18,586	12,991	2,193	858
Hardwoods						
White oak	10,025	230	1,118	3,387	3,972	1,318
Select red oak	28,156	3,416	5,451	7,635	10,627	1,027
Other red oak	11,211	557	535	4,381	4,981	757
Hickory	644	164	65	111	231	73
Basswood	7,199	2,668	1,957	1,061	1,293	220
Beech	321	225	--	17	--	79
Yellow birch	3,027	1,449	1,191	307	39	41
Hard maple	21,064	10,085	6,877	2,371	1,234	497
Soft maple	10,322	3,879	2,664	1,845	1,208	726
Elm	15,600	5,894	5,158	2,257	1,729	562
Ash	6,675	1,586	2,703	1,312	411	663
Cottonwood	120	13	--	3	85	19
Balsam poplar	148	90	47	--	--	11
Bigtooth aspen	22,002	8,296	9,682	2,638	1,229	157
Quaking aspen	74,114	32,353	34,064	6,750	566	381
Paper birch	13,333	6,710	5,134	937	287	265
Black walnut	134	--	--	--	99	35
Other hardwoods 2/	1,475	321	171	152	438	393
Total	225,570	77,936	76,817	35,164	28,429	7,224
All species	284,958	102,696	95,403	48,155	30,622	8,082

1/ Less than 500 cubic feet.

2/ Includes willow, hackberry, river birch, black cherry and butternut.

Table 54.--Timber removals from sawtimber on commercial forest land by species group and Forest Survey Unit, Wisconsin, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Softwoods						
Jack pine	20,320	4,581	9,315	6,070	354	--
Red pine	35,981	13,098	12,770	8,634	1,464	15
White pine	36,240	14,046	9,788	11,064	854	488
White spruce	5,155	2,497	2,656	--	--	2
Black spruce	884	730	154	--	--	--
Balsam fir	17,602	10,778	6,753	68	--	3
Hemlock	12,433	10,764	643	850	--	176
Tamarack	654	174	386	90	--	4
Northern white-cedar	4,383	2,043	1,293	123	--	924
Other softwoods	--	--	--	--	--	--
Total	133,652	58,711	43,758	26,899	2,672	1,612
Hardwoods						
White oak	41,499	793	3,934	13,363	18,124	5,285
Select red oak	120,169	12,002	20,781	33,359	49,484	4,543
Other red oak	43,856	2,049	2,243	15,930	21,004	2,630
Hickory	2,294	477	178	420	1,027	192
Basswood	25,798	8,337	7,003	4,366	5,216	876
Beech	1,312	932	--	80	--	300
Yellow birch	8,206	5,004	2,431	664	2	105
Hard maple	75,889	37,084	21,711	9,249	6,206	1,639
Soft maple	28,684	9,750	6,226	6,153	3,545	3,010
Elm	52,498	21,501	16,307	6,275	6,436	1,979
Ash	16,991	4,028	4,964	3,879	1,875	2,245
Cottonwood	568	57	--	18	406	87
Balsam poplar	306	218	51	--	--	37
Bigtooth aspen	70,020	24,430	30,821	9,960	4,032	777
Quaking aspen	183,661	81,457	83,522	16,082	1,804	796
Paper birch	16,907	9,109	5,413	1,314	495	576
Black walnut	519	--	--	--	338	181
Other hardwoods[2/]	3,498	654	225	375	1,245	999
Total	692,675	217,882	205,810	121,487	121,239	26,257
All species	826,327	276,593	249,568	148,386	123,911	27,869

[1/] International 1/4-inch rule.

[2/] Includes willow, hackberry, river birch, black cherry and butternut.

Table 55.--Average annual timber removals from growing stock on commercial forest land by species group and county, Wisconsin, 1967-1982[1/]

(In thousand cubic feet)

Species group	All Units	Total Northeast Unit	Northeast Unit									
			Florence	Forest	Langlade	Lincoln	Menominee	Marinette	Oconto	Oneida	Shawano	Vilas
Softwoods												
Jack pine	18,173	8,684	925	3,369	240	--	--	935	1,394	1,302	--	519
Red pine	5,156	3,756	72	847	111	383	--	160	109	1,848	--	226
White pine	5,382	2,777	82	468	--	--	965	123	126	641	192	180
White spruce	1,975	1,115	226	615	75	--	--	92	--	107	--	--
Black spruce	1,070	484	48	53	--	--	--	86	--	279	--	18
Balsam fir	9,101	5,092	98	1,302	435	208	--	1,115	70	1,565	26	273
Hemlock	4,840	2,819	145	220	67	99	532	--	96	737	12	911
Tamarack	1,159	107	48	--	--	--	--	22	--	--	37	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	2,854	1,825	145	--	203	--	--	491	27	108	851	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--
Total	49,710	26,659	1,789	6,874	1,131	690	1,497	3,024	1,822	6,587	1,118	2,127
Hardwoods												
White oak	5,369	79	--	--	--	--	41	--	--	--	38	--
Select red oak	21,046	1,995	57	67	39	--	323	579	36	249	365	280
Other red oak	5,890	623	--	--	--	--	--	395	--	--	228	--
Select hickory	237	--	--	--	--	--	--	--	--	--	--	--
Other hickory	251	--	--	--	--	--	--	--	--	--	--	--
Basswood	8,083	3,083	331	910	290	1,058	148	160	37	149	--	--
Beech	45	45	--	--	--	--	45	--	--	--	--	--
Yellow birch	3,560	1,486	588	309	302	24	170	--	--	--	93	--
Hard maple	14,463	5,324	949	1,976	602	926	108	111	113	150	203	186
Soft maple	10,043	2,165	--	59	50	491	159	783	400	97	32	94
Elm	17,949	5,796	1,138	1,132	1,147	395	1,057	151	162	51	563	--
Black ash	2,893	518	--	79	86	107	93	104	--	--	49	--
White & green ash	3,091	725	--	--	45	130	50	--	327	36	137	--
Cottonwood	129	56	--	--	--	--	--	--	56	--	--	--
Willow	178	--	--	--	--	--	--	--	--	--	--	--
Hackberry	51	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	218	191	88	37	--	--	--	66	--	--	--	--
Bigtooth aspen	17,407	6,644	--	--	398	--	706	3,191	823	258	--	1,268
Quaking aspen	46,327	18,832	2,575	2,100	2,206	1,669	189	4,303	1,490	2,715	68	1,517
Paper birch	12,543	6,452	191	430	511	412	218	1,477	431	1,417	315	1,050
River birch	213	--	--	--	--	--	--	--	--	--	--	--
Black cherry	700	322	--	97	94	--	--	--	37	41	53	--
Black walnut	71	--	--	--	--	--	--	--	--	--	--	--
Butternut	139	68	--	--	--	--	--	68	--	--	--	--
Other hardwoods	8	--	--	--	--	--	--	--	--	--	--	--
Total	170,904	54,404	5,917	7,196	5,770	5,212	3,307	11,388	3,912	5,163	2,144	4,395
All species	220,614	81,063	7,706	14,070	6,901	5,902	4,804	14,412	5,734	11,750	3,262	6,522

(Table 55 continued on next page)

[1/]The corrected volumes shown in this table supercede the volumes reported in Research Bulletins NC-73, NC-78, NC-84, NC-86, and NC-87.

(Table 55 continued)

Species group	Total Northwest Unit	Northwest Unit											
		Ashland	Barron	Bayfield	Burnett	Douglas	Iron	Polk	Price	Rusk	Sawyer	Taylor	Washburn
Softwoods													
Jack pine	6,209	--	--	1,072	1,963	1,891	--	466	12	--	474	--	331
Red pine	314	--	--	161	--	--	90	--	--	--	--	--	63
White pine	1,084	--	--	256	77	44	--	229	--	--	478	--	--
White spruce	860	552	--	137	--	--	103	--	--	--	--	38	30
Black spruce	586	227	--	--	--	195	54	--	--	--	15	--	95
Balsam fir	3,911	1,496	--	19	--	430	217	--	131	40	1,260	318	--
Hemlock	1,801	237	--	--	--	--	832	--	--	--	526	206	--
Tamarack	1,009	--	121	--	--	346	--	--	394	--	--	--	148
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	527	--	--	--	66	--	53	--	408	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	16,301	2,512	121	1,645	2,106	2,906	1,349	695	945	40	2,753	562	667
Hardwoods													
White oak	445	--	93	--	57	--	--	273	--	--	--	--	22
Select red oak	4,137	--	963	992	281	43	--	1,262	53	258	31	--	254
Other red oak	267	--	195	--	72	--	--	--	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	2,572	225	110	251	46	14	--	144	1,013	222	73	474	--
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	1,164	--	--	46	--	--	403	--	204	197	134	180	--
Hard maple	5,369	1,364	286	691	--	--	83	121	1,340	916	182	386	--
Soft maple	3,223	306	238	1,135	46	69	76	107	146	140	152	762	46
Elm	4,056	841	--	50	135	112	73	190	911	876	38	830	--
Black ash	1,527	42	--	647	181	134	--	--	92	431	--	--	--
White & green ash	799	186	--	118	64	--	--	--	152	146	35	98	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	27	--	--	27	--	--	--	--	--	--	--	--	--
Bigtooth aspen	8,144	137	94	2,854	1,275	1,195	304	342	163	--	892	60	828
Quaking aspen	19,796	3,077	529	3,352	1,189	1,727	1,921	798	1,371	188	1,845	1,664	2,135
Paper birch	4,776	518	--	1,794	73	431	366	81	363	416	400	134	200
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	113	--	--	--	--	--	--	--	56	--	40	17	--
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	56,415	6,696	2,508	11,957	3,419	3,725	3,226	3,318	5,864	3,790	3,822	4,605	3,485
All species	72,716	9,208	2,629	13,602	5,525	6,631	4,575	4,013	6,809	3,830	6,575	5,167	4,152

(Table 55 continued on next page)

(Table 55 continued)

Species group	Total Central Unit	Central Unit												
		Adams	Chippewa	Clark	Eau Claire	Jackson	Juneau	Marathon	Marquette	Monroe	Portage	Waupaca	Waushara	Wood
Softwoods														
Jack pine	3,280	976	--	229	301	697	450	29	--	476	--	--	--	122
Red pine	1,086	81	68	--	--	--	--	437	292	--	175	--	--	33
White pine	1,514	--	--	--	--	--	--	175	460	--	411	265	106	97
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	63	--	--	--	--	--	--	63	--	--	--	--	--	--
Hemlock	220	--	--	--	--	--	--	220	--	--	--	--	--	--
Tamarack	43	--	43	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	6,206	1,057	111	229	301	697	450	924	752	476	586	265	106	252
Hardwoods														
White oak	1,145	122	--	417	142	--	--	--	--	29	54	304	--	77
Select red oak	2,811	--	361	375	670	94	--	113	--	383	114	574	--	127
Other red oak	1,584	537	--	--	91	68	378	--	--	53	214	--	64	179
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	44	--	--	--	--	--	--	44	--	--	--	--	--	--
Basswood	1,164	--	449	148	--	--	--	290	--	--	--	--	--	277
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	866	--	36	--	--	--	--	678	--	--	--	51	--	101
Hard maple	1,620	--	95	197	--	--	--	926	--	--	--	284	--	118
Soft maple	1,240	--	142	55	--	29	--	260	--	31	249	341	--	133
Elm	4,558	--	159	832	--	--	--	2,670	--	--	24	485	--	388
Black ash	524	--	372	42	--	--	--	--	33	--	--	--	--	77
White & green ash	612	--	52	--	36	--	--	391	--	--	29	--	--	104
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	1,111	53	150	65	81	60	83	136	--	129	--	137	--	217
Quaking aspen	7,486	136	1,808	1,398	478	65	75	2,164	--	--	316	--	--	1,046
Paper birch	969	--	--	137	--	--	--	661	--	--	--	--	--	171
River birch	30	--	--	--	--	30	--	--	--	--	--	--	--	--
Black cherry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	25,764	848	3,624	3,666	1,498	346	536	8,333	33	625	1,000	2,176	64	3,015
All species	31,970	1,905	3,735	3,895	1,799	1,043	986	9,257	785	1,101	1,586	2,441	170	3,267

(Table 55 continued on next page)

(Table 55 continued)

Species group	Total Southwest Unit	Southwest Unit													
		Buffalo	Crawford	Dunn	Grant	Iowa	La Crosse	Lafayette	Pepin	Pierce	Richland	St.Croix	Sauk	Trempealeau	Vernon
Softwoods															
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardwoods															
White oak	2,586	78	45	73	353	154	56	--	45	60	49	--	987	439	247
Select red oak	10,176	1,479	299	568	432	86	1,091	--	336	339	--	126	4,612	300	508
Other red oak	2,646	545	268	587	--	--	171	--	--	--	--	204	328	316	227
Select hickory	126	73	--	--	--	--	--	--	--	--	--	--	43	--	10
Other hickory	157	--	--	--	--	--	--	--	--	--	--	--	--	--	157
Basswood	1,255	--	--	232	--	--	--	--	--	244	101	31	574	--	73
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	44	--	--	--	--	--	--	--	--	--	--	--	44	--	--
Hard maple	1,329	--	--	--	213	--	--	--	--	59	--	921	136	--	--
Soft maple	1,310	400	--	117	--	--	131	--	--	--	--	--	300	362	--
Elm	1,814	68	--	108	268	227	167	--	--	130	283	281	139	101	42
Black ash	188	--	--	--	--	--	188	--	--	--	--	--	--	--	--
White & green ash	312	30	--	--	--	40	--	--	--	53	54	--	--	75	60
Cottonwood	73	--	--	--	--	--	--	--	--	--	73	--	--	--	--
Willow	178	24	--	--	--	--	--	--	--	--	--	--	--	154	--
Hackberry	51	--	--	--	--	--	--	--	--	--	51	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	1,508	--	--	89	--	--	--	--	--	--	214	--	1,143	--	62
Quaking aspen	86	--	--	86	--	--	--	--	--	--	--	--	--	--	--
Paper birch	211	163	--	--	--	--	--	--	--	--	--	48	--	--	--
River birch	183	66	--	--	--	--	117	--	--	--	--	--	--	--	--
Black cherry	54	--	--	--	--	--	--	--	--	--	--	--	--	31	23
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	71	71	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	8	--	--	--	--	--	--	--	--	--	--	--	--	--	8
Total	24,366	2,997	612	1,860	1,266	507	1,921	--	381	885	825	1,611	8,306	1,778	1,417
All species	24,366	2,997	612	1,860	1,266	507	1,921	--	381	885	825	1,611	8,306	1,778	1,417

(Table 55 continued on next page)

(Table 55 continued)

Species group	Total Southeast Unit	Southeast Unit												
		Brown	Calumet	Columbia	Dane	Dodge	Door	Fond du Lac	Green	Green Lake	Jefferson	Kenosha	Kewaunee	Manitowoc
Softwoods														
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White pine	7	--	--	--	--	--	7	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	35	--	--	--	--	--	--	--	--	--	--	--	35	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	502	--	--	--	--	--	369	--	--	--	--	--	133	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	544	--	--	--	--	--	376	--	--	--	--	--	168	--
Hardwoods														
White oak	1,114	--	--	286	552	--	--	--	74	--	39	--	--	--
Select red oak	1,927	--	--	642	412	--	--	--	214	123	--	38	--	--
Other red oak	770	--	--	435	295	--	--	--	--	--	--	--	--	--
Select hickory	111	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	50	--	--	--	--	50	--	--	--	--	--	--	--	--
Basswood	9	--	--	--	--	--	--	--	--	--	--	9	--	--
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	821	--	--	--	--	--	--	--	--	--	--	--	--	--
Soft maple	2,105	867	--	--	--	--	--	41	--	--	36	--	--	119
Elm	1,725	530	--	--	--	23	81	41	438	--	--	--	247	--
Black ash	136	--	--	--	--	--	--	--	--	--	57	--	--	48
White & green ash	643	--	--	--	--	--	196	--	--	--	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Quaking aspen	127	--	--	26	--	--	101	--	--	--	--	--	--	--
Paper birch	135	--	--	25	--	--	37	--	--	--	--	--	--	--
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	211	--	--	26	185	--	--	--	--	--	--	--	--	--
Black walnut	71	--	--	--	--	--	--	--	35	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	9,955	1,397	--	1,440	1,444	73	415	82	761	123	132	47	247	167
All species	10,499	1,397	--	1,440	1,444	73	791	82	761	123	132	47	415	167

(Table 55 continued on next page)

(Table 55 continued)

Species group	Southeast Unit									
	Milwaukee	Outagamie	Ozaukee	Racine	Rock	Sheboygen	Walworth	Washington	Waukesha	Winnebago
Softwoods										
Jack pine	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--
Hardwoods										
White oak	--	58	--	--	--	40	65	--	--	--
Select red oak	--	199	--	--	--	169	--	--	40	90
Other red oak	--	--	--	--	--	--	--	--	40	--
Select hickory	--	--	--	--	--	--	--	111	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	--	--
Beech	--	--	--	--	--	--	--	--	--	--
Yellow birch	--	--	--	--	--	--	--	--	--	--
Hard maple	--	--	--	--	--	295	--	408	--	118
Soft maple	--	868	--	--	--	153	--	--	--	21
Elm	--	224	--	--	--	--	--	37	--	104
Black ash	--	--	--	--	--	31	--	--	--	--
White & green ash	--	84	--	--	--	363	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	--	--
Paper birch	--	73	--	--	--	--	--	--	--	--
River birch	--	--	--	--	--	--	--	--	--	--
Black cherry	--	--	--	--	--	--	--	--	--	--
Black walnut	--	36	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--
Total	--	1,542	--	--	--	1,051	65	556	80	333
All species	--	1,542	--	--	--	1,051	65	556	80	333

Table 56.--Average annual timber removals from sawtimber on commercial forest land by species group and county Wisconsin, 1968-1982[1/]

(In thousand board feet)[2/]

Species group	All Units	Total Northeast Unit	Northeast Unit									
			Florence	Forest	Langlade	Lincoln	Menominee	Marinette	Oconto	Oneida	Shawano	Vilas
Softwoods												
Jack pine	34,414	13,812	1,002	3,665	259	--	--	2,606	1,517	4,017	--	746
Red pine	15,289	12,228	414	3,968	107	601	--	--	627	5,286	--	1,225
White pine	27,661	14,338	500	2,472	--	--	5,373	685	666	2,700	972	970
White spruce	7,022	3,783	590	2,176	353	--	--	393	--	271	--	--
Black spruce	1,438	470	--	--	--	--	--	--	--	470	--	--
Balsam fir	19,673	10,201	272	2,275	810	298	--	2,332	211	3,550	--	453
Hemlock	21,638	12,214	677	856	287	474	2,487	--	252	3,327	--	3,854
Tamarack	2,835	128	--	--	--	--	--	128	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	4,767	3,443	93	--	83	--	--	1,031	--	355	1,881	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--
Total	134,737	70,617	3,548	15,412	1,899	1,373	7,860	7,175	3,273	19,976	2,853	7,248
Hardwoods												
White oak	21,920	380	--	--	--	--	197	--	--	--	183	--
Select red oak	90,266	8,387	276	329	190	--	1,407	2,130	177	1,207	1,767	904
Other red oak	22,525	1,455	--	--	--	--	--	390	--	--	1,065	--
Select hickory	440	--	--	--	--	--	--	--	--	--	--	--
Other hickory	500	--	--	--	--	--	--	--	--	--	--	--
Basswood	28,081	8,488	1,160	3,400	501	1,982	728	--	177	540	--	--
Beech	224	224	--	--	--	--	224	--	--	--	--	--
Yellow birch	14,762	6,757	3,153	1,537	1,173	--	894	--	--	--	--	--
Hard maple	45,946	17,869	3,631	6,718	1,576	3,765	551	--	--	--	1,020	608
Soft maple	23,916	3,439	--	324	232	1,931	201	387	192	--	--	172
Elm	66,652	20,589	3,653	3,573	4,110	1,604	4,113	180	584	224	2,548	--
Black ash	4,323	1,173	--	--	--	594	579	--	--	--	--	--
White & green ash	12,158	1,900	--	--	220	500	--	--	357	174	649	--
Cottonwood	310	--	--	--	--	--	--	--	--	--	--	--
Willow	442	--	--	--	--	--	--	--	--	--	--	--
Hackberry	233	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	656	656	365	--	--	--	--	291	--	--	--	--
Bigtooth aspen	38,249	11,012	--	--	1,269	--	1,124	4,147	2,318	305	--	1,849
Quaking aspen	80,712	31,106	5,752	3,917	5,275	1,241	--	3,184	3,555	4,004	--	4,178
Paper birch	18,872	6,755	--	1,055	873	344	407	1,688	252	1,587	--	549
River birch	307	--	--	--	--	--	--	--	--	--	--	--
Black cherry	1,970	1,005	--	233	302	--	--	--	213	--	257	--
Black walnut	185	--	--	--	--	--	--	--	--	--	--	--
Butternut	654	197	--	--	--	--	--	197	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--
Total	474,303	121,392	17,990	21,086	15,721	11,961	10,425	12,594	7,825	8,041	7,489	8,260
All species	609,040	192,009	21,538	36,498	17,620	13,334	18,285	19,769	11,098	28,017	10,342	15,508

(Table 56 continued on next page)

[1/] The corrected volumes shown in this table supercede the volumes reported in Research Bulletins NC-73, NC-78, NC-84, NC-86, and NC-87.

[2/] International 1/4-inch rule.

(Table 56 continued)

Species group	Total Northwest Unit	Northwest Unit											
		Ashland	Barron	Bayfield	Burnett	Douglas	Iron	Polk	Price	Rusk	Sawyer	Taylor	Washburn
Softwoods													
Jack pine	10,482	--	--	1,436	2,552	2,122	--	1,541	63	--	2,040	--	728
Red pine	1,818	--	--	924	--	--	519	--	--	--	--	--	375
White pine	5,752	--	--	1,408	412	--	--	1,350	--	--	2,582	--	--
White spruce	3,239	1,624	--	740	--	--	525	--	--	--	--	201	149
Black spruce	968	809	--	--	--	159	--	--	--	--	--	--	--
Balsam fir	9,472	3,260	--	--	--	1,558	208	--	258	--	3,892	296	--
Hemlock	8,392	1,065	--	--	--	--	4,024	--	--	--	2,432	871	--
Tamarack	2,707	--	657	--	--	593	--	--	1,297	--	--	--	160
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	1,019	--	--	--	273	--	279	--	467	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	43,849	6,758	657	4,508	3,237	4,432	5,555	2,891	2,085	--	10,946	1,368	1,412
Hardwoods													
White oak	937	--	304	--	167	--	--	466	--	--	--	--	--
Select red oak	11,528	--	2,974	2,019	190	--	--	4,965	258	909	--	--	213
Other red oak	1,206	--	929	--	277	--	--	--	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	8,145	825	--	1,218	169	--	--	721	2,646	1,079	168	1,319	--
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	4,432	--	--	215	--	--	2,041	--	324	958	535	359	--
Hard maple	12,029	3,496	312	787	--	--	204	633	1,305	3,208	554	1,530	--
Soft maple	2,360	398	333	437	93	--	--	--	242	--	164	693	--
Elm	14,432	3,570	--	--	298	251	336	809	3,584	3,008	--	2,576	--
Black ash	2,132	296	--	--	585	510	--	--	--	741	--	--	--
White & green ash	3,305	992	--	334	180	--	--	--	449	781	--	569	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	17,195	--	452	7,302	2,544	--	1,488	1,624	248	--	2,717	272	548
Quaking aspen	35,129	6,224	1,683	6,954	893	2,065	2,667	--	1,911	235	3,958	3,630	4,909
Paper birch	10,668	2,498	--	4,971	187	620	539	--	--	775	230	497	351
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	326	--	--	--	--	--	--	--	326	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	123,824	18,299	6,987	24,237	5,583	3,446	7,275	9,218	11,293	11,694	8,326	11,445	6,021
All species	167,673	25,057	7,644	28,745	8,820	7,878	12,830	12,109	13,378	11,694	19,272	12,813	7,433

(Table 56 continued on next page)

(Table 56 continued)

Species group	Total Central Unit	Central Unit												
		Adams	Chippewa	Clark	Eau Claire	Jackson	Juneau	Marathon	Marquette	Monroe	Portage	Waupaca	Waushara	Wood
Softwoods														
Jack pine	10,120	4,295	--	1,217	578	680	1,235	--	--	1,911	--	--	--	204
Red pine	1,243	--	389	--	--	--	--	315	--	--	352	--	--	187
White pine	7,535	--	--	--	--	--	--	471	2,566	--	1,965	1,462	511	560
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	1,032	--	--	--	--	--	--	1,032	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	19,930	4,295	389	1,217	578	680	1,235	1,818	2,566	1,911	2,317	1,462	511	951
Hardwoods														
White oak	4,309	379	--	2,112	--	--	--	--	--	155	299	994	--	370
Select red oak	11,153	--	1,431	1,883	983	460	--	555	--	1,938	566	2,701	--	636
Other red oak	5,042	1,085	--	--	449	190	1,651	--	--	153	897	--	150	467
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	259	--	--	--	--	--	--	259	--	--	--	--	--	--
Basswood	5,269	--	2,195	583	--	--	--	1,427	--	--	--	--	--	1,064
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	3,398	--	--	--	--	--	--	2,650	--	--	--	248	--	500
Hard maple	6,404	--	261	702	--	--	--	3,682	--	--	--	1,485	--	274
Soft maple	3,974	--	744	--	--	--	--	945	--	168	443	1,242	--	432
Elm	17,444	--	503	3,651	--	--	--	9,971	--	--	--	2,138	--	1,181
Black ash	721	--	271	236	--	--	--	--	--	--	--	--	--	214
White & green ash	2,759	--	--	--	--	--	--	2,030	--	--	164	--	--	565
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	3,807	251	704	315	374	--	--	639	--	591	--	331	--	602
Quaking aspen	14,349	495	4,453	2,698	404	--	--	4,699	--	--	680	--	--	920
Paper birch	748	--	--	467	--	--	--	--	--	--	--	--	--	281
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	79,636	2,210	10,562	12,647	2,210	650	1,651	26,857	--	3,005	3,049	9,139	150	7,506
All species	99,566	6,505	10,951	13,864	2,788	1,330	2,886	28,675	2,566	4,916	5,366	10,601	661	8,457

(Table 56 continued on next page)

(Table 56 continued)

Species group	Total Southwest Unit	Southwest Unit													
		Buffalo	Crawford	Dunn	Grant	Iowa	La Crosse	Lafayette	Pepin	Pierce	Richland	St.Croix	Sauk	Trempealeau	Vernon
Softwoods															
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardwoods															
White oak	11,594	169	--	371	1,758	749	279	--	221	300	237	--	3,971	2,334	1,205
Select red oak	49,893	7,411	1,504	2,888	2,189	424	5,458	--	1,694	1,701	--	522	22,307	1,291	2,504
Other red oak	11,804	2,500	1,267	2,825	--	--	835	--	--	--	--	592	1,549	1,553	683
Select hickory	440	204	--	--	--	--	--	--	--	--	--	--	236	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	6,179	--	--	1,139	--	--	--	--	--	1,228	494	157	2,807	--	354
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	175	--	--	--	--	--	--	--	--	--	--	--	175	--	--
Hard maple	6,558	--	--	--	1,136	--	--	--	--	305	--	4,608	509	--	--
Soft maple	5,039	1,994	--	628	--	--	--	--	--	--	--	--	1,516	901	--
Elm	7,024	139	--	474	1,249	997	508	--	--	591	1,234	1,114	234	484	--
Black ash	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White & green ash	1,719	144	--	--	--	216	--	--	--	270	324	--	--	485	280
Cottonwood	310	--	--	--	--	--	--	--	--	--	310	--	--	--	--
Willow	442	--	--	--	--	--	--	--	--	--	--	--	--	442	--
Hackberry	233	--	--	--	--	--	--	--	--	--	233	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	6,235	--	--	453	--	--	--	--	--	--	1,027	--	4,468	--	287
Quaking aspen	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Paper birch	701	701	--	--	--	--	--	--	--	--	--	--	--	--	--
River birch	307	307	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	457	457	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	109,110	14,026	2,771	8,778	6,332	2,386	7,080	--	1,915	4,395	3,859	6,993	37,772	7,490	5,313
All species	109,110	14,026	2,771	8,778	6,332	2,386	7,080	--	1,915	4,395	3,859	6,993	37,772	7,490	5,313

(Table 56 continued on next page)

(Table 56 continued)

Species group	Total Southeast Unit	Southeast Unit												
		Brown	Calumet	Columbia	Dane	Dodge	Door	Fond du Lac	Green	Green Lake	Jefferson	Kenosha	Kewaunee	Manitowoc
Softwoods														
Jack pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--	--	--	--	--
White pine	36	--	--	--	--	--	36	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	305	--	--	--	--	--	145	--	--	--	--	--	160	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	341	--	--	--	--	--	181	--	--	--	--	--	160	--
Hardwoods														
White oak	4,700	--	--	1,425	2,224	--	--	--	159	--	191	--	--	--
Select red oak	9,305	--	--	3,152	2,051	--	--	--	1,104	619	--	188	--	--
Other red oak	3,018	--	--	2,058	756	--	--	--	--	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hickory	241	--	--	--	--	241	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beech	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Yellow birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	3,086	--	--	--	--	--	--	--	--	--	--	--	--	--
Soft maple	9,104	4,294	--	--	--	--	--	209	--	--	--	--	--	514
Elm	7,163	2,329	--	--	--	--	371	--	1,953	--	--	--	1,133	--
Black ash	297	--	--	--	--	--	--	--	--	--	297	--	--	--
White & green ash	2,475	--	--	--	--	--	922	--	--	--	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Quaking aspen	128	--	--	128	--	--	--	--	--	--	--	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Black cherry	639	--	--	--	639	--	--	--	--	--	--	--	--	--
Black walnut	185	--	--	--	--	--	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	40,341	6,623	--	6,763	5,670	241	1,293	209	3,216	619	488	188	1,133	514
All species	40,682	6,623	--	6,763	5,670	241	1,474	209	3,216	619	488	188	1,293	514

(Table 56 continued on next page)

(Table 56 continued)

Species group	Southeast Unit									
	Milwaukee	Outagamie	Ozaukee	Racine	Rock	Sheboygen	Walworth	Washington	Waukesha	Winnebago
Softwoods										
Jack pine	--	--	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--	--	--
White pine	--	--	--	--	--	--	--	--	--	--
White spruce	--	--	--	--	--	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--
Balsam fir	--	--	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--
Hardwoods										
White oak	--	181	--	--	--	195	325	--	--	--
Select red oak	--	796	--	--	--	738	--	--	203	454
Other red oak	--	--	--	--	--	--	--	--	204	--
Select hickory	--	--	--	--	--	--	--	--	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	--	--
Beech	--	--	--	--	--	--	--	--	--	--
Yellow birch	--	--	--	--	--	--	--	--	--	--
Hard maple	--	--	--	--	--	1,020	--	2,066	--	--
Soft maple	--	3,913	--	--	--	174	--	--	--	--
Elm	--	748	--	--	--	--	--	155	--	474
Black ash	--	--	--	--	--	--	--	--	--	--
White & green ash	--	445	--	--	--	1,103	--	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--
Willow	--	--	--	--	--	--	--	--	--	--
Hackberry	--	--	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	--	--	--	--	--	--	--
Bigtooth aspen	--	--	--	--	--	--	--	--	--	--
Quaking aspen	--	--	--	--	--	--	--	--	--	--
Paper birch	--	--	--	--	--	--	--	--	--	--
River birch	--	--	--	--	--	--	--	--	--	--
Black cherry	--	--	--	--	--	--	--	--	--	--
Black walnut	--	185	--	--	--	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--	--	--
Total	--	6,268	--	--	--	3,235	325	2,221	407	928
All species	--	6,268	--	--	--	3,235	325	2,221	407	928

Table 57.--Timber removals from growing stock and sawtimber on commercial forest land by species group, Wisconsin, 1967 and 1982

Species group	Growing stock		Sawtimber	
	1967	1982	1967	1982
	Thousand cubic feet		Thousand board feet[1/]	
Softwoods				
Jack pine	13,295	14,552	28,247	20,320
Red pine	1,770	16,502	6,196	35,981
White pine	4,162	7,967	22,414	36,240
White spruce	543	1,976	3,386	5,155
Black spruce	612	1,235	838	884
Balsam fir	3,963	9,351	14,227	17,602
Hemlock	4,237	4,839	21,414	12,433
Tamarack	329	545	985	654
Northern white-cedar	1,043	2,421	2,331	4,383
Other softwoods	2	--	1	--
Total	29,956	59,388	100,039	133,652
Hardwoods				
White oak	8,142	10,025	23,911	41,499
Select red oak	24,558	28,156	91,847	120,169
Other red oak	9,083	11,211	26,226	43,856
Hickory	2,013	644	3,188	2,294
Basswood	8,198	7,199	28,330	25,798
Beech	334	321	1,560	1,312
Yellow birch	3,037	3,027	11,962	8,206
Hard maple	17,551	21,064	63,978	75,889
Soft maple	9,732	10,322	24,623	28,684
Elm	13,300	15,600	46,906	52,498
Ash	7,116	6,675	17,038	16,991
Cottonwood	449	120	1,853	568
Balsam poplar	85	148	179	306
Bigtooth aspen	21,059	22,002	64,025	70,020
Quaking aspen	66,532	74,114	118,278	183,661
Paper birch	10,497	13,333	19,622	16,907
Black walnut	292	134	1,677	519
Other hardwoods[2/]	1,216	1,475	4,926	3,498
Total	203,194	225,570	550,129	692,675
All species	233,150	284,958	650,168	826,327

[1/] International 1/4-inch rule.

[2/] Includes willow, hackberry, river birch, black cherry and butternut.

Table 58.--Timber removals from growing stock and sawtimber on commercial forest land by item and species category, Wisconsin, 1982

Item	Growing stock						Sawtimber					
	All species	Pine	Other softwoods	Aspen	Oak	Other hardwoods	All species	Pine	Other softwoods	Aspen	Oak	Other hardwoods
	Thousand cubic feet						Thousand board feet[1]					
Roundwood products												
Pulpwood[2]	138,978	26,326	11,711	68,867	4,754	27,320	274,919	39,422	19,271	159,938	10,984	45,304
Saw logs	79,456	9,017	3,609	13,175	27,791	25,864	413,368	48,309	17,265	66,198	148,085	133,511
Fuelwood	20,387	128	43	1,569	8,278	10,369	58,801	369	99	4,892	23,777	29,664
Posts	3,412	1,471	1,373	94	229	245	3,714	1,105	1,408	185	494	522
Veneer logs	3,961	5	--	1,899	902	1,155	25,610	41	--	12,282	5,820	7,467
Poles	142	126	14	--	2	--	571	503	54	--	14	--
Other	811	1	--	483	107	220	4,264	4	--	2,323	803	1,134
Total	247,147	37,074	16,750	86,087	42,063	65,173	781,247	89,753	38,097	245,818	189,977	217,602
Logging residue	16,375	1,116	653	5,297	4,134	5,175	30,610	2,038	1,333	4,661	10,991	11,587
Other removals	21,436	831	2,964	4,732	3,195	9,714	14,470	750	1,681	3,202	4,556	4,281
All removals	284,958	39,021	20,367	96,116	49,392	80,062	826,327	92,541	41,111	253,681	205,524	233,470

[1] International 1/4-inch rule.

[2] Includes particleboard and waferboard bolts.

[3] Less than 500 cubic feet.

Table 59.--Net annual growth and removals of growing stock and sawtimber on commercial forest land by species group, Wisconsin, 1982

Species group	Growing stock		Sawtimber	
	Growth	Removals	Growth	Removals
	Thousand cubic feet		Thousand board feet[1/]	
Softwoods				
Jack pine	23,092	14,552	71,795	20,320
Red pine	43,977	16,502	122,739	35,981
White pine	16,876	7,967	83,335	36,240
White spruce	10,934	1,976	39,075	5,155
Black spruce	5,491	1,235	4,577	884
Balsam fir	22,338	9,351	69,757	17,602
Hemlock	2,840	4,839	12,886	12,433
Tamarack	2,041	545	7,231	654
Eastern redcedar	244	--	251	--
Northern white-cedar	14,647	2,421	46,882	4,383
Other softwoods	183	--	413	--
Total	142,663	59,388	458,941	133,652
Hardwoods				
White oak	11,453	10,025	57,123	41,499
Select red oak	34,507	28,156	153,714	120,169
Other red oak	15,934	11,211	71,490	43,856
Hickory	6,109	644	14,347	2,294
Basswood	25,979	7,199	88,496	25,798
Beech	653	321	1,679	1,312
Yellow birch	2,673	3,027	7,464	8,206
Hard maple	46,806	21,064	109,715	75,889
Soft maple	51,605	10,322	77,489	28,684
Elm	-359	15,600	4,764	52,498
Ash	26,214	6,675	72,103	16,991
Cottonwood	1,008	120	4,266	568
Balsam poplar	733	148	2,032	306
Bigtooth aspen	19,240	22,002	66,267	70,020
Quaking aspen	60,648	74,114	168,395	183,661
Paper birch	34,906	13,333	57,418	16,907
Black walnut	611	134	3,762	519
Other hardwoods[2/]	9,853	1,475	23,554	3,498
Total	348,573	225,570	984,078	692,675
All species	491,236	284,958	1,443,019	826,327

[1/] International 1/4-inch rule.

[2/] Includes willow, hackberry, river birch, black cherry and butternut.

Table 60.--Net annual growth and removals of growing stock on commercial forest land by ownership class and softwoods and hardwoods, Wisconsin, 1982

(In thousand cubic feet)

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	47,866	14,384	33,482	17,291	5,991	11,300
Miscellaneous federal	4,127	1,543	2,584	170	124	46
State	18,037	7,236	10,801	5,372	1,804	3,568
County and municipal	74,770	25,061	49,709	41,396	7,170	34,226
Indian	12,021	4,484	7,537	9,013	3,047	5,966
Forest industry	42,140	13,788	28,352	29,012	9,001	20,011
Farmer and other[1/]	292,275	76,167	216,108	182,704	32,251	150,453
All owners	491,236	142,663	348,573	284,958	59,388	225,570

[1/] Includes miscellaneous private-corporation and miscellaneous private-indivdual.

Table 61.--Net annual growth and removals of sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Wisconsin, 1982

(In thousand board feet)[1/]

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	171,142	81,079	90,063	44,267	13,093	31,174
Miscellaneous federal	10,698	5,442	5,256	400	202	198
State	49,558	24,531	25,027	13,083	4,245	8,838
County and municipal	181,415	73,249	108,166	97,558	13,321	84,237
Indian	39,787	18,355	21,432	28,932	10,050	18,882
Forest industry	118,039	49,693	68,346	75,439	19,820	55,619
Farmer and other[2/]	872,380	206,592	665,788	566,648	72,921	493,727
All owners	1,443,019	458,941	984,078	826,327	133,652	692,675

[1/] International 1/4-inch rule.

[2/] Includes miscellaneous private-corporation and miscellaneous private-indivdual.

Table 62.--Annual mortality of growing stock on commercial forest land by softwoods and hardwoods, Wisconsin, 1967 and 1982

(In thousand cubic feet)

Species	1967[1/]	1982
Softwoods	15,688	22,051
Hardwoods	80,519	114,717
Total	96,207	136,768

[1/] Figures have been adjusted from those published after the 1968 survey to conform to 1982 volumes because of changes in survey procedures and volume equations.

Table 63.--Annual mortality of growing stock on commercial forest land by species group and cause, Wisconsin, 1982

(In thousand cubic feet)

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Jack pine	4,206	54	537	265	10	319	61	2,960
Red pine	170	--	0	10	13	15	--	132
White pine	1,421	28	129	--	31	67	7	1,159
White spruce	719	20	18	--	2	101	131	447
Black spruce	862	10	100	--	12	248	2	490
Balsam fir	9,855	1,101	545	--	26	2,307	42	5,834
Hemlock	1,474	1	62	--	56	207	4	1,144
Tamarack	2,294	22	251	--	114	263	--	1,644
Eastern redcedar	--	--	--	--	--	--	--	--
Northern white-cedar	1,041	--	26	--	5	338	1	671
Other softwoods	9	--	--	--	1	--	--	8
Total	22,051	1,236	1,668	275	270	3,865	248	14,489
Hardwoods								
White oak	1,802	--	88	2	4	111	36	1,561
Select red oak	6,443	1	520	14	50	1,019	21	4,818
Other red oak	7,227	1	604	15	1	477	10	6,119
Select hickory	161	--	1	--	--	39	--	121
Other hickory	263	--	--	--	--	15	--	248
Basswood	3,248	20	195	--	16	182	88	2,747
Beech	548	--	21	--	--	--	--	527
Yellow birch	2,517	--	376	--	--	165	1	1,975
Hard maple	4,374	3	619	--	64	417	25	3,246
Soft maple	5,603	1	694	45	6	519	16	4,322
Elm	22,556	531	16,561	--	14	157	33	5,260
Black ash	2,185	--	57	--	2	163	1	1,962
White & green ash	640	--	40	2	--	45	25	528
Cottonwood	93	--	3	--	3	2	--	85
Willow	284	--	12	--	--	33	--	239
Hackberry	28	--	--	--	--	--	--	28
Balsam poplar	106	--	4	--	--	--	--	102
Bigtooth aspen	4,854	7	428	27	--	134	--	4,258
Quaking aspen	16,106	34	2,928	114	60	1,128	67	11,775
Paper birch	31,246	19	6,409	11	221	3,630	159	20,797
River birch	2,684	--	541	2	41	124	25	1,951
Black cherry	1,092	--	209	--	15	29	54	785
Black walnut	96	--	4	--	1	--	--	91
Butternut	471	--	99	--	--	14	--	358
Other hardwoods	90	--	10	--	--	1	2	77
Total	114,717	617	30,423	232	498	8,404	563	73,980
All species	136,768	1,853	32,091	507	768	12,269	811	88,469

Table 64.--Annual mortality of sawtimber on commercial forest land by species group and cause, Wisconsin, 1982

(In thousand board feet)[1/]

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Jack pine	6,535	128	368	254	30	1,196	6	4,553
Red pine	648	--	--	--	--	86	--	562
White pine	6,434	75	702	--	176	415	2	5,064
White spruce	1,708	9	62	--	4	313	--	1,320
Black spruce	590	55	18	--	--	355	--	162
Balsam fir	15,511	622	1,751	--	17	4,065	3	9,053
Hemlock	5,752	8	249	--	197	878	14	4,406
Tamarack	1,589	--	97	--	--	346	--	1,146
Eastern redcedar	1	--	--	--	--	--	--	1
Northern white-cedar	3,023	5	204	--	67	1,185	--	1,562
Other softwoods	4	--	--	--	--	--	--	4
Total	41,795	902	3,451	254	491	8,839	25	27,833
Hardwoods								
White oak	4,188	--	298	--	18	353	8	3,511
Select red oak	18,574	--	1,586	--	247	2,610	4	14,127
Other red oak	10,656	--	707	65	--	1,421	--	8,463
Select hickory	454	--	11	--	--	5	--	438
Other hickory	27	6	7	--	--	--	--	14
Basswood	6,208	24	648	--	51	521	--	4,964
Beech	2,083	--	47	--	--	--	--	2,036
Yellow birch	7,752	--	1,137	--	--	701	--	5,914
Hard maple	8,624	--	1,290	--	36	1,258	76	5,964
Soft maple	7,156	--	1,086	--	10	516	--	5,544
Elm	70,205	1,221	51,608	--	53	571	--	16,752
Black ash	2,207	--	26	--	--	188	--	1,993
White & green ash	1,456	--	153	--	--	136	--	1,167
Cottonwood	229	--	11	--	15	6	--	197
Willow	838	--	14	--	--	135	--	689
Hackberry	121	--	--	--	--	--	--	121
Balsam poplar	383	--	--	--	--	--	--	383
Bigtooth aspen	9,573	30	685	--	--	615	--	8,243
Quaking aspen	18,122	172	3,963	--	78	2,477	--	11,432
Paper birch	37,320	--	8,750	--	240	5,921	--	22,409
River birch	1,667	--	244	3	3	125	--	1,292
Black cherry	873	--	153	--	--	61	--	659
Black walnut	317	--	20	--	8	--	--	289
Butternut	814	--	127	--	--	--	--	687
Other hardwoods	141	--	17	--	--	--	--	124
Total	209,988	1,453	72,588	68	759	17,620	88	117,412
All species	251,783	2,355	76,039	322	1,250	26,459	113	145,245

[1/] International 1/4-inch rule.

Table 65.--Annual mortality of growing stock and sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Wisconsin, 1982

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
National Forest	14,286	6,850	7,436	23,492	9,819	13,673
Miscellaneous federal	1,533	169	1,364	3,313	476	2,837
State	4,959	817	4,142	9,195	1,623	7,572
County and municipal	20,452	3,086	17,366	24,975	6,077	18,898
Indian	4,742	764	3,978	12,147	3,134	9,013
Forest industry	9,761	2,229	7,532	16,715	4,602	12,113
Farmer	32,840	2,186	30,654	80,885	3,878	77,007
Misc. private-corp.	5,912	495	5,417	10,078	906	9,172
Misc. private-indiv.	42,283	5,455	36,828	70,983	11,280	59,703
All owners	136,768	22,051	114,717	251,783	41,795	209,988

[1/] International 1/4-inch rule.

Table 66.--Output of timber products by product, softwoods and hardwoods, and source of material, Wisconsin, 1981

Product	Standard units	Total		Roundwood products				Plant byproducts	
				Growing stock		Non-growing stock			
		No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet
Pulpwood[1]									
Softwoods	Standard[2]	632,007	49,845	482,292	38,037	103,076	8,124	46,639	3,684
Hardwoods	cords	1,756,746	138,761	1,277,953	100,941	234,817	18,546	243,976	19,274
Total		2,388,753	188,606	1,760,245	138,978	337,893	26,670	290,615	22,958
Saw logs									
Softwoods	Thousand[3]	75,683	13,450	70,952	12,626	4,731	824	--	--
Hardwoods	board feet	415,092	72,544	382,381	66,830	32,711	5,714	--	--
Total		490,775	85,994	453,333	79,456	37,442	6,538	--	--
Veneer logs									
Softwoods	Thousand[3]	44	5	44	5	--	--	--	--
Hardwoods	board feet	27,206	4,384	24,548	3,956	2,658	428	--	--
Total		27,250	4,389	24,592	3,961	2,658	428	--	--
Fuelwood									
Softwoods	Standard[2]	87,988	6,141	2,460	171	46,970	3,272	38,558	2,698
Hardwoods	cords	2,077,523	145,282	289,137	20,216	1,577,412	110,298	210,974	14,768
Total		2,165,511	151,423	291,597	20,387	1,624,382	113,570	249,532	17,466
Posts									
Softwoods	Thousand	3,350	3,441	2,769	2,844	581	597	--	--
Hardwoods	pieces	921	920	569	568	352	352	--	--
Total		4,271	4,361	3,338	3,412	933	949	--	--
Poles									
Softwoods	Pieces	16,417	140	16,417	140	--	--	--	--
Hardwoods		375	2	375	2	--	--	--	--
Total		16,792	142	16,792	142	--	--	--	--
Other[4]									
Softwoods	Thousand	1,499	1,499	1	1	--	--	1,498	1,498
Hardwoods	cubic feet	8,167	8,167	810	810	34	34	7,323	7,323
Total		9,666	9,666	811	811	34	34	8,821	8,821
All products									
Softwoods	Thousand	--	74,521	--	53,824	--	12,817	--	7,880
Hardwoods	cubic feet	--	370,060	--	193,323	--	135,372	--	41,365
Total		--	444,581	--	247,147	--	148,189	--	49,245

[1] Includes roundwood and plant byproducts used for particleboard and waferboard.

[2] 128 cubic feet; includes wood, bark, and air space.

[3] International 1/4-inch rule.

[4] Other (industrial production) includes cabin logs, charcoal wood, shingle bolts, pilings, etc.

Table 67.--Output of roundwood products by product, softwoods and hardwoods, and source of material, Wisconsin, 1981

(In thousand cubic feet)

Product and species group	All sources	Growing-stock trees			Rough and rotten trees	Salvable dead trees	Other sources
		Total	Sawtimber	Poletimber			
Industrial products							
Saw logs							
Softwoods	13,450	12,626	11,812	814	37	173	614
Hardwoods	72,544	66,830	60,561	6,269	1,194	3,362	1,158
Subtotal	85,994	79,456	72,373	7,083	1,231	3,535	1,772
Veneer logs and bolts							
Softwoods	5	5	5	--	--	--	--
Hardwoods	4,384	3,956	3,956	--	424	--	4
Subtotal	4,389	3,961	3,961	--	424	--	4
Pulpwood[1/]							
Softwoods	46,161	38,037	17,170	20,867	825	2,867	4,432
Hardwoods	119,487	100,941	57,299	43,642	7,925	4,557	6,064
Subtotal	165,648	138,978	74,469	64,509	8,750	7,424	10,496
Cooperage							
Softwoods	--	--	--	--	--	--	--
Hardwoods	120	107	107	--	8	--	5
Subtotal	120	107	107	--	8	--	5
Piling							
Softwoods	1	1	1	--	--	--	--
Hardwoods	--	--	--	--	--	--	--
Subtotal	1	1	1	--	--	--	--
Poles							
Softwoods	140	140	117	23	--	--	--
Hardwoods	2	2	2	--	--	--	--
Subtotal	142	142	119	23	--	--	--
Posts (Round and split)							
Softwoods	3,441	2,844	759	2,085	73	--	524
Hardwoods	920	568	238	330	176	--	176
Subtotal	4,361	3,412	997	2,415	249	--	700
Other							
Softwoods	--	--	--	--	--	--	--
Hardwoods	724	703	514	189	11	4	6
Subtotal	724	703	514	189	11	4	6
All industrial products							
Softwoods	63,198	53,653	29,864	23,789	935	3,040	5,570
Hardwoods	198,181	173,107	122,677	50,430	9,738	7,923	7,413
Total	261,379	226,760	152,541	74,219	10,673	10,963	12,983
Fuelwood							
Softwoods	3,443	171	105	66	33	1,614	1,625
Hardwoods	130,514	20,216	12,395	7,821	3,989	60,646	45,663
Total	133,957	20,387	12,500	7,887	4,022	62,260	47,288
All products							
Softwoods	66,641	53,824	29,969	23,855	968	4,654	7,195
Hardwoods	328,695	193,323	135,072	58,251	13,727	68,569	53,076
Total	395,336	247,147	165,041	82,106	14,695	73,223	60,271

[1/] Includes particleboard and waferboard bolts.

Table 68.--Timber products from roundwood by species group and product, Wisconsin, 1981

Species group	All products	Pulpwood[1]		Saw logs		Veneer logs	
	Thousand cubic feet	Standard cords[2]	Thousand cubic feet	Thousand board feet[3]	Thousand cubic feet	Thousand board feet[3]	Thousand cubic feet
Softwoods							
Jack pine	19,023	217,116	17,125	5,043	1,056	--	--
Red pine	19,493	180,878	14,287	14,669	2,482	--	--
White pine	8,821	21,346	1,676	36,628	6,220	44	5
White spruce	1,722	15,491	1,221	2,200	460	--	--
Black spruce	1,146	11,847	929	947	198	--	--
Balsam fir	9,613	104,778	8,249	5,150	1,079	--	--
Hemlock	4,249	28,932	2,285	8,913	1,514	--	--
Tamarack	453	4,980	389	88	17	--	--
Northern white-cedar	2,121	--	--	2,045	424	--	--
Other softwoods	--	--	--	--	--	--	--
Total	66,641	585,368	46,161	75,683	13,450	44	5
Hardwoods							
White oak	20,189	16,988	1,338	34,490	6,028	244	36
Select red oak	46,339	45,378	3,578	93,582	16,393	4,547	739
Other red oak	19,502	15,445	1,219	38,983	6,826	1,392	226
Hickory	1,682	516	39	2,105	362	--	--
Basswood	8,228	15,764	1,241	28,039	4,993	1,042	166
Beech	721	46	2	2,702	479	4	[4]
Yellow birch	4,847	28,182	2,221	4,658	825	1,291	205
Hard maple	30,038	118,509	9,371	46,753	7,795	2,321	375
Soft maple	14,460	63,461	5,016	18,607	3,304	511	80
Elm	47,026	70,738	5,586	42,840	7,637	1,988	313
Ash	9,938	37,577	2,969	11,860	2,108	290	42
Cottonwood	450	26	2	1,378	235	83	14
Balsam poplar	240	624	49	954	168	--	--
Bigtooth aspen	22,968	210,522	16,627	18,119	3,159	2,896	471
Quaking aspen	76,583	754,627	59,611	58,288	10,172	10,075	1,638
Paper birch	18,921	130,661	10,333	9,186	1,627	441	67
Black walnut	245	--	--	753	123	34	5
Other hardwoods[5]	6,318	3,706	285	1,795	310	47	7
Total	328,695	1,512,770	119,487	415,092	72,544	27,206	4,384
All species	395,336	2,098,138	165,648	490,775	85,994	27,250	4,389

(Table 68 continued on next page)

[1] Includes particleboard and waferboard bolts.

[2] 128 cubic feet; includes wood, bark, and air space.

[3] International 1/4-inch rule.

[4] Less than 500 cubic feet.

[5] Includes willow, hackberry, river birch, black cherry and butternut.

(Table 68 continued)

Species group	Fuelwood		Posts		Poles		Other products
	Standard cords [2]	Thousand cubic feet	Thousand pieces	Thousand cubic feet	Pieces	Thousand cubic feet	Thousand cubic feet
Softwoods							
Jack pine	12,094	842	--	--	--	--	--
Red pine	9,568	666	1,880	1,931	14,817	126	1
White pine	13,176	920	--	--	--	--	--
White spruce	591	41	--	--	--	--	--
Black spruce	276	19	--	--	--	--	--
Balsam fir	4,111	285	--	--	--	--	--
Hemlock	6,426	450	--	--	--	--	--
Tamarack	687	47	--	--	--	--	--
Northern white-cedar	2,501	173	1,470	1,510	1,600	14	--
Other softwoods	--	--	--	--	--	--	--
Total	49,430	3,443	3,350	3,441	16,417	140	1
Hardwoods							
White oak	176,193	12,321	348	345	150	1	120
Select red oak	366,052	25,613	14	15	141	1	--
Other red oak	160,431	11,223	8	8	84	[4]	--
Hickory	18,384	1,281	--	--	--	--	--
Basswood	26,191	1,828	--	--	--	--	--
Beech	3,423	240	--	--	--	--	--
Yellow birch	22,952	1,596	--	--	--	--	--
Hard maple	178,620	12,487	--	--	--	--	10
Soft maple	84,933	5,928	--	--	--	--	132
Elm	478,585	33,490	--	--	--	--	--
Ash	69,031	4,819	--	--	--	--	--
Cottonwood	2,901	199	--	--	--	--	--
Balsam poplar	316	23	--	--	--	--	--
Bigtooth aspen	33,655	2,354	88	89	--	--	268
Quaking aspen	69,836	4,884	63	63	--	--	215
Paper birch	98,095	6,859	--	--	--	--	35
Black walnut	1,680	117	--	--	--	--	--
Other hardwoods [5]	75,271	5,252	400	400	--	--	64
Total	1,866,549	130,514	921	920	375	2	844
All species	1,915,979	133,957	4,271	4,361	16,792	142	845

[2] 128 cubic feet; includes wood, bark, and air space.

[4] Less than 500 cubic feet.

[5] Includes willow, hackberry, river birch, black cherry and butternut.

Table 69.--Volume of primary plant residue by use and type of residue, Wisconsin, 1981

(In thousand cubic feet)

Use	Wood residue							
	Total		Coarse [1]		Fine [2]		Bark [3]	
	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods
Fiber products [4]	2,394.6	14,094.8	2,199.5	12,223.9	195.1	1,870.9	3.6	189.0
Charcoal	2.9	447.5	1.9	389.1	1.0	58.4	1.3	241.3
Industrial fuel	1,436.3	9,215.3	746.9	3,747.4	689.4	5,467.9	1,636.5	9,749.8
Domestic fuel	1,262.8	5,552.9	1,176.4	5,151.1	86.4	401.8	519.6	1,967.7
Miscellaneous [5]	1,496.0	6,874.7	88.7	781.5	1,407.3	6,093.2	249.2	2,567.0
Not used [6]	189.5	615.1	66.9	297.4	122.6	317.7	193.9	459.5
Total	6,782.1	36,800.3	4,280.3	22,590.4	2,501.8	14,209.9	2,604.1	15,174.3

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Does not include bark disposal at pulpmills.

[4] For manufacture of pulp, hardboard, or roofing felt.

[5] Livestock bedding, mulch, small dimension, and specialty items.

[6] Includes residue burned as waste.

Table 70.--All live shrub[1] biomass yields on commercial forest land by shrub species group and forest type, Wisconsin, 1983

(In pounds per acre)

Shrub species group	Forest type															
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Tall shrubs															
Jack pine	340	18	--	--	--	1	--	44	42	--	3	5	--	--	--
Red pine	29	178	--	--	--	6	--	--	2	--	--	1	1	--	--
White pine	19	16	287	--	--	60	--	1	10	3	20	22	9	--	--
White spruce	--	--	--	3	290	--	8	--	1	9	6	8	27	--	--
Black spruce	4	17	1	34	--	1,396	10	956	--	--	17	5	12	--	--
Balsam fir	25	94	151	959	26	251	644	425	6	119	134	116	213	--	--
Hemlock	--	--	23	--	3	6	19	1	--	2	13	2	46	--	--
Tamarack	--	--	--	15	--	135	7	953	--	--	--	--	--	--	--
Eastern redcedar	--	--	9	--	--	--	--	--	4	--	--	1	19	--	--
Northern white-cedar	--	--	--	13	--	37	339	19	--	24	1	1	6	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Select white oak	218	117	43	--	--	--	--	--	184	4	4	17	15	--	--
Select red oak	49	19	44	--	1	--	--	--	110	81	23	26	10	--	--
Other red oak	228	114	82	--	--	15	--	--	194	2	4	31	2	--	--
Select hickory	--	--	--	--	--	--	--	--	22	23	2	--	29	--	--
Other hickory	--	--	--	--	--	--	--	--	23	--	13	1	12	--	--
Basswood	--	--	--	--	36	--	--	--	24	10	55	5	12	--	18
Beech	--	--	3	--	--	--	--	--	--	--	26	--	1	--	--
Yellow birch	--	5	--	1	--	--	15	--	--	7	38	18	--	--	--
Hard maple	--	6	30	6	54	4	4	--	81	22	379	46	74	--	--
Soft maple	40	74	362	98	87	41	98	53	146	191	155	243	173	--	2
Elm	1	--	--	5	69	--	10	2	54	43	113	22	10	--	--
Black ash	--	5	5	151	--	--	173	27	6	498	36	27	41	--	--
White & green ash	--	--	5	--	17	--	--	--	12	68	77	17	24	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--
Willow	1	--	--	2	--	--	--	21	--	--	--	4	--	--	--
Hackberry	--	--	--	--	--	--	--	--	3	2	--	--	--	--	--
Balsam poplar	--	--	--	1	--	--	--	2	--	4	3	8	--	--	--
Bigtooth aspen	7	1	45	1	--	--	--	--	19	--	5	112	10	--	--
Quaking aspen	78	95	94	18	631	15	8	--	22	33	50	694	61	--	1
Paper birch	5	1	2	31	--	43	16	33	15	10	15	56	112	--	--
River birch	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--
Black cherry	42	69	27	59	25	1	--	3	78	93	55	90	36	--	217
Black walnut	--	--	--	--	--	--	--	--	--	15	4	--	--	--	--
Butternut	--	--	--	--	--	--	--	--	1	--	--	1	2	--	--
Other hardwoods	19	17	--	3	--	--	6	--	87	51	23	66	69	--	8
Striped maple	--	--	--	--	--	--	--	--	--	--	--	--	17	--	--
Mountain maple	--	--	32	133	--	--	92	--	1	106	32	34	62	--	--
American hornbeam	--	4	--	--	--	--	--	--	37	19	126	32	1	--	--
Apple	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--
Eastern hophornbeam	--	--	21	--	--	--	--	--	75	41	168	21	12	--	--
Pincherry	9	1	2	1	--	4	--	15	15	5	7	16	5	--	--
Chokecherry	43	51	25	9	1	5	--	--	36	28	30	56	39	--	6
Wild plum	--	--	--	--	--	--	--	--	3	16	--	--	--	--	--
Mountain ash	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Green alder	19	--	--	83	--	--	--	--	--	--	1	--	--	--	--
Speckled alder	39	339	205	4,719	--	2,314	3,135	2,516	155	3,702	174	2,355	1,536	--	2,619

[1] Trees under 1.0-inch d.b.h. are also included.

(Table 70 continued on next page)

(Table 70 continued)

Shrub species group	Forest type														
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Dogwood	17	8	25	74	6	1	242	95	191	342	121	206	134	--	298
Black alder	106	--	2	5	--	18	37	1,381	519	567	34	101	421	--	9
Witch hazel	--	17	560	18	--	--	--	--	44	--	17	102	1	--	--
Common ninebark	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--
Juneberry	61	106	268	25	--	95	9	162	152	35	25	190	27	--	--
Hazel	550	629	952	418	29	59	64	32	586	386	339	1,019	602	--	104
Prickly ash	1	1	1	109	--	--	62	1	252	193	256	31	16	--	327
Alder buckthorn	--	--	--	--	--	--	--	--	--	50	8	--	5	--	--
Leatherwood	--	--	14	1	--	--	--	--	1	--	13	4	3	--	--
Viburnum	--	--	--	2	--	2	--	--	3	23	8	7	2	--	15
Elder	--	--	--	--	--	--	--	--	16	17	20	--	--	--	--
Sumac	38	2	--	--	--	--	--	1	35	5	38	16	7	--	--
Buffaloberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New Jersey tea	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--
Russian olive	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shrubby willows	123	79	--	193	393	119	464	54	66	432	61	376	146	--	217
Miscellaneous tall shrubs	27	126	1	13	5	370	599	588	17	393	41	62	20	--	94
Total tall shrubs	2,138	2,212	3,322	7,203	1,673	4,998	6,061	7,385	3,353	7,676	2,793	6,276	4,082	--	3,935
Low shrubs															
Yew	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--
Virginia creeper	1	--	--	--	35	--	--	1	12	18	7	3	2	--	--
Labrador tea	7	--	1	25	--	384	50	142	--	4	2	1	12	--	--
Leatherleaf	12	6	1	1	--	153	9	161	--	--	1	1	2	--	--
Bog laurel	--	--	--	--	--	59	8	37	--	--	--	1	--	--	--
Sweetfern	66	24	9	--	--	1	--	--	23	--	--	15	--	--	7
Gooseberry-current	6	3	1	7	3	3	8	4	23	28	28	15	15	--	12
Raspberry-blackberry	152	105	85	148	141	37	86	33	127	178	134	203	188	--	276
Rose	19	8	7	1	5	--	--	--	17	1	1	6	5	--	1
Bilberry-blueberry	406	114	259	73	--	348	21	245	190	4	34	135	60	--	63
Bush honeysuckle	5	7	15	11	6	5	2	8	5	3	9	22	22	--	--
Honeysuckle	4	3	6	19	--	2	5	2	8	3	6	12	15	--	--
Poison ivy	7	1	7	--	--	--	--	--	12	3	3	2	3	--	--
Greenbriar	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--
Bog rosemary	1	--	--	--	--	18	1	8	--	--	--	--	--	--	--
Grape	--	--	--	--	--	--	--	--	8	3	1	--	1	--	--
Strawberry	17	20	17	31	73	5	11	9	11	24	18	48	35	--	28
Miscellaneous low shrubs	83	35	38	13	--	31	28	50	56	10	20	52	25	--	41
Total low shrubs	786	326	448	329	263	1,046	231	700	492	279	264	516	385	--	428
All shrubs	2,924	2,538	3,770	7,532	1,936	6,044	6,292	8,085	3,845	7,955	3,057	6,792	4,467	--	4,363
Number of plots[2/]	176	134	55	100	13	78	75	56	528	211	752	838	129	--	17

[2/] Number of plots by forest type from which average yields were derived.

Table 71.--All live above-ground tree biomass yields on commercial forest land by species group and forest type, Wisconsin, 1983

(In pounds per acre)

Species group	Forest type							
	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack
Softwoods								
Jack pine	80,928	5,614	5,733	133	--	174	105	356
Red pine	3,986	107,160	14,460	970	534	1,027	34	169
White pine	1,256	7,494	77,976	2,509	3,826	2,118	1,873	2,473
White spruce	--	883	1,677	4,507	102,341	148	1,311	354
Black spruce	93	408	1,275	3,003	452	39,903	3,768	6,989
Balsam fir	55	1,132	4,406	52,933	6,918	7,412	17,274	3,939
Hemlock	--	282	1,213	1,778	563	1,017	3,676	69
Tamarack	4	--	515	1,167	--	8,391	4,277	40,632
Eastern redcedar	21	71	--	--	--	--	--	--
Northern white-cedar	--	66	536	8,736	2,214	1,764	71,227	910
Other softwoods	--	771	219	--	--	--	--	--
Total	86,343	123,881	108,010	75,736	116,848	61,954	103,545	55,891
Hardwoods								
White oak	541	354	2,986	23	--	--	58	--
Select red oak	1,574	2,260	2,260	233	--	460	142	61
Other red oak	7,404	3,410	7,677	28	--	33	87	--
Select hickory	--	--	174	--	--	--	63	--
Other hickory	--	--	17	--	--	--	122	--
Basswood	--	53	448	62	416	--	366	--
Beech	--	83	--	--	--	--	--	--
Yellow birch	--	37	334	2,880	355	568	5,500	165
Hard maple	--	1,205	1,269	1,230	1,337	455	354	120
Soft maple	338	2,494	6,520	6,344	1,854	1,631	3,345	2,255
Elm	101	452	350	773	247	--	893	654
Black ash	--	2	621	4,373	262	46	8,603	570
White & green ash	--	270	190	31	1,255	--	150	--
Cottonwood	59	--	2,161	--	--	--	--	--
Willow	--	--	--	30	--	--	156	--
Hackberry	--	--	--	--	--	--	--	--
Balsam poplar	--	--	--	271	1,189	58	216	--
Bigtooth aspen	809	883	2,023	428	248	420	278	1,280
Quaking aspen	3,982	6,287	14,197	9,401	7,399	5,252	3,501	2,257
Paper birch	568	1,816	5,406	6,201	987	2,037	6,795	4,001
River birch	--	--	--	--	--	--	--	--
Black cherry	19	199	1,135	1,379	1,222	550	57	114
Black walnut	--	--	32	--	--	--	--	--
Butternut	--	--	--	--	--	--	--	--
Other hardwoods	52	760	--	--	--	--	7	--
Noncommercial species	20	67	422	301	--	--	48	--
Total	15,467	20,632	48,222	33,988	16,771	11,510	30,741	11,477
All species	101,810	144,513	156,232	109,724	133,619	73,464	134,286	67,368

(Table 71 continued on next page)

(Table 71 continued)

Species group	Forest type						
	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked
Softwoods							
Jack pine	3,109	109	201	1,519	539	--	1,550
Red pine	803	39	338	1,292	1,842	14,488	--
White pine	1,395	1,452	2,587	1,281	2,027	--	463
White spruce	10	411	393	835	1,276	3,307	77
Black spruce	--	255	99	302	322	--	--
Balsam fir	94	5,222	2,805	3,606	6,450	--	51
Hemlock	45	1,744	6,287	213	594	--	299
Tamarack	17	877	112	241	634	--	631
Eastern redcedar	111	141	40	3	16	--	--
Northern white-cedar	5	3,458	995	444	1,022	--	--
Other softwoods	22	--	1	--	--	66,025	--
Total	5,611	13,708	13,858	9,736	14,722	83,820	3,071
Hardwoods							
White oak	30,044	2,342	2,949	1,806	2,907	--	4,995
Select red oak	44,436	1,936	9,338	5,496	11,301	--	2,229
Other red oak	33,625	1,171	1,131	2,512	1,053	--	11,483
Select hickory	4,934	29	655	47	1,029	--	438
Other hickory	2,162	102	1,443	118	--	--	165
Basswood	3,069	2,478	17,094	1,051	1,158	--	1,626
Beech	16	62	976	27	--	--	--
Yellow birch	88	3,296	6,870	466	962	--	272
Hard maple	3,252	2,442	48,723	3,006	4,043	--	2,112
Soft maple	5,827	29,815	18,482	10,203	12,647	--	702
Elm	2,698	10,867	8,694	1,153	1,541	--	2,198
Black ash	383	26,373	2,728	1,096	1,563	--	796
White & green ash	1,146	6,980	5,191	476	863	--	146
Cottonwood	305	1,001	127	130	35	--	--
Willow	44	2,252	100	106	60	--	1,419
Hackberry	51	65	28	--	--	--	--
Balsam poplar	31	501	110	614	224	--	--
Bigtooth aspen	5,110	357	2,227	11,631	4,387	--	93
Quaking aspen	3,505	5,682	7,085	43,282	13,561	--	3,750
Paper birch	4,772	3,837	5,594	9,709	64,667	--	808
River birch	65	859	--	--	--	--	--
Black cherry	3,611	713	2,925	1,547	942	--	1,323
Black walnut	781	--	146	--	--	--	435
Butternut	1,001	105	812	71	49	--	639
Other hardwoods	667	2,203	504	71	142	--	326
Noncommercial species	2,174	966	3,230	925	1,293	--	508
Total	153,797	106,434	147,162	95,543	124,427	--	36,463
All species	159,408	120,142	161,020	105,279	139,149	83,820	39,534

Table 72.--All live above-ground tree biomass on commercial forest land by species group and forest type, Wisconsin, 1983

(In green tons)

Species group	All types	Forest type						
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar
Softwoods								
Jack pine	31,901,423	22,113,539	1,342,319	646,655	27,910	--	23,683	19,391
Red pine	33,290,029	1,089,168	25,622,052	1,631,059	203,315	16,404	140,215	6,279
White pine	23,324,659	343,246	1,791,763	8,795,677	526,219	117,458	289,164	347,154
White spruce	7,626,857	--	211,167	189,171	945,169	3,141,892	20,152	243,010
Black spruce	8,785,257	25,500	97,509	143,870	629,764	13,866	5,446,780	698,460
Balsam fir	33,680,908	14,938	270,694	496,885	11,100,013	212,383	1,011,672	3,201,796
Hemlock	15,696,211	--	67,457	136,853	372,781	17,276	138,811	681,376
Tamarack	8,205,172	1,183	--	58,111	244,786	--	1,145,436	792,759
Eastern redcedar	357,260	5,709	16,916	--	--	--	--	--
Northern white-cedar	20,711,115	--	15,848	60,508	1,831,972	67,957	240,783	13,202,007
Other softwoods	315,370	--	184,250	24,758	--	--	--	--
Total	183,894,261	23,593,283	29,619,975	12,183,547	15,881,929	3,587,236	8,456,696	19,192,232
Hardwoods								
White oak	55,153,727	147,759	84,750	336,810	4,743	--	--	10,794
Select red oak	97,516,483	430,012	540,472	254,960	48,756	--	62,790	26,367
Other red oak	60,135,348	2,023,161	815,230	865,974	5,955	--	4,474	16,111
Select hickory	8,852,912	--	--	19,603	--	--	--	11,589
Other hickory	6,266,473	--	--	1,877	--	--	--	22,535
Basswood	42,458,393	--	12,619	50,496	12,963	12,771	--	67,772
Beech	2,074,892	--	19,832	--	--	--	--	--
Yellow birch	18,765,601	--	8,832	37,715	603,961	10,891	77,571	1,019,334
Hard maple	110,772,803	--	288,153	143,137	257,995	41,045	62,073	65,650
Soft maple	88,416,305	92,374	596,425	735,472	1,330,370	56,904	222,635	619,998
Elm	31,105,789	27,684	108,104	39,531	162,063	7,595	--	165,532
Black ash	27,370,645	--	579	70,077	917,020	8,055	6,333	1,594,745
White & green ash	17,565,489	--	64,502	21,439	6,604	38,525	--	27,719
Cottonwood	1,793,794	16,021	--	243,714	--	--	--	--
Willow	2,000,372	--	--	--	6,290	--	--	28,863
Hackberry	169,438	--	--	--	--	--	--	--
Balsam poplar	1,790,031	--	--	--	56,842	36,504	7,852	40,069
Bigtooth aspen	33,368,546	221,147	211,006	228,175	89,781	7,608	57,345	51,554
Quaking aspen	105,932,416	1,087,938	1,503,156	1,601,294	1,971,395	227,151	716,972	648,867
Paper birch	61,536,562	155,310	434,182	609,803	1,300,306	30,311	278,011	1,259,522
River birch	625,592	--	--	--	--	--	--	--
Black cherry	14,985,469	5,105	47,497	128,075	289,103	37,510	75,024	10,477
Black walnut	1,445,608	--	--	3,619	--	--	--	--
Butternut	3,300,969	--	--	--	--	--	--	--
Other hardwoods	3,712,380	14,333	181,797	--	--	--	--	1,334
Noncommercial species	12,266,115	5,400	16,020	47,649	63,127	--	--	8,936
Total	809,382,152	4,226,244	4,933,156	5,439,420	7,127,274	514,870	1,571,080	5,697,768
All species	993,276,413	27,819,527	34,553,131	17,622,967	23,009,203	4,102,106	10,027,776	24,890,000

(Table 72 continued on next page)

(Table 72 continued)

Species group	Forest type							
	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-birch	Aspen	Paper birch	Exotic	Nonstocked
Softwoods								
Jack pine	39,662	4,444,415	67,622	401,220	2,477,878	172,858	--	124,271
Red pine	18,823	1,148,420	24,363	675,899	2,107,051	591,044	15,937	--
White pine	275,371	1,992,823	900,877	5,169,157	2,088,349	650,266	--	37,135
White spruce	39,368	14,709	254,814	785,860	1,362,306	409,393	3,638	6,208
Black spruce	778,220	--	158,134	196,954	492,851	103,349	--	--
Balsam fir	438,658	134,994	3,239,032	5,606,383	5,880,237	2,069,158	--	4,065
Hemlock	7,726	64,948	1,081,951	12,564,433	348,003	190,645	--	23,951
Tamarack	4,524,342	24,086	544,151	223,538	392,751	203,397	--	50,632
Eastern redcedar	--	158,171	87,288	79,250	4,814	5,112	--	--
Northern white-cedar	101,343	6,581	2,144,946	1,987,504	723,730	327,936	--	--
Other softwoods	--	30,770	--	2,965	--	--	72,627	--
Total	6,223,513	8,019,917	8,503,178	27,693,163	15,877,970	4,723,158	92,202	246,262
Hardwoods								
White oak	--	42,942,850	1,452,711	5,894,316	2,945,780	932,604	--	400,610
Select red oak	6,828	63,515,820	1,201,037	18,662,050	8,963,303	3,625,294	--	178,794
Other red oak	--	48,063,205	726,366	2,259,313	4,096,771	337,811	--	920,977
Select hickory	--	7,052,382	17,741	1,309,294	77,042	330,140	--	35,121
Other hickory	--	3,090,612	63,340	2,883,214	191,694	--	--	13,201
Basswood	--	4,386,562	1,537,091	34,161,653	1,714,530	371,557	--	130,379
Beech	--	22,651	38,650	1,950,212	43,547	--	--	--
Yellow birch	18,411	125,932	2,044,707	13,728,452	759,553	308,450	--	21,792
Hard maple	13,352	4,648,379	1,514,553	97,370,566	4,901,346	1,297,138	--	169,416
Soft maple	251,090	8,329,296	18,494,207	36,935,813	16,638,378	4,057,042	--	56,301
Elm	72,863	3,856,491	6,741,104	17,373,829	1,880,287	494,443	--	176,263
Black ash	63,518	547,508	16,359,395	5,451,016	1,787,209	501,378	--	63,812
White & green ash	--	1,637,682	4,329,881	10,374,010	776,526	276,908	--	11,693
Cottonwood	--	435,588	620,630	254,746	211,916	11,179	--	--
Willow	--	62,930	1,396,776	200,382	172,111	19,191	--	113,829
Hackberry	--	72,294	40,472	56,672	--	--	--	--
Balsam poplar	--	44,091	310,651	220,693	1,001,591	71,738	--	--
Bigtooth aspen	142,492	7,304,512	221,492	4,451,275	18,967,359	1,407,376	--	7,424
Quaking aspen	251,282	5,009,541	3,524,236	14,159,065	70,580,408	4,350,355	--	300,756
Paper birch	445,465	6,820,910	2,380,299	11,179,061	15,833,483	20,745,082	--	64,817
River birch	--	92,963	532,629	--	--	--	--	--
Black cherry	12,716	5,160,964	442,179	5,846,102	2,522,341	302,261	--	106,115
Black walnut	--	1,115,744	--	291,379	--	--	--	34,866
Butternut	--	1,431,389	65,193	1,621,785	115,668	15,651	--	51,283
Other hardwoods	--	952,779	1,366,405	1,007,686	116,468	45,440	--	26,138
Noncommercial species	--	3,106,756	598,985	6,454,369	1,509,216	414,884	--	40,773
Total	1,278,017	219,829,831	66,020,730	294,096,953	155,806,527	39,915,922	--	2,924,360
All species	7,501,530	227,849,748	74,523,908	321,790,116	171,684,497	44,639,080	92,202	3,170,622

Table 73.--All live above-ground tree biomass by species group and tree biomass component, Wisconsin, 1983

(In green tons)

Species group	All components	All live 1- to 5-inch trees	Biomass component: Growing stock: Stumps	Growing stock: Boles	Growing stock: Tops and limbs	Cull: Stumps	Cull: Boles	Cull: Tops and limbs
Softwoods								
Jack pine	31,901,423	4,871,034	1,255,526	16,053,012	7,296,082	112,898	1,635,819	677,052
Red pine	33,290,029	3,190,443	1,305,904	19,511,246	8,867,864	17,514	281,984	115,074
White pine	23,324,659	2,069,547	878,635	12,940,036	5,881,203	75,293	1,023,054	456,891
White spruce	7,626,857	1,090,542	426,783	4,049,560	1,840,517	13,383	147,522	58,550
Black spruce	8,785,257	4,920,293	242,012	2,336,213	1,061,805	7,673	184,689	32,572
Balsam fir	33,680,908	10,211,999	1,651,821	14,389,931	6,540,199	46,659	637,127	203,172
Hemlock	15,696,211	641,783	734,624	8,770,923	3,986,390	94,230	1,015,034	453,227
Tamarack	8,205,172	2,434,729	311,962	3,520,311	1,599,981	16,723	237,182	84,284
Eastern redcedar	357,260	119,654	9,524	68,232	31,012	5,042	105,586	18,210
Northern white-cedar	20,711,115	4,722,797	1,117,377	8,071,784	3,668,652	234,745	2,092,041	803,719
Other softwoods	315,370	81,521	9,768	85,767	38,981	5,301	68,915	25,117
Total	183,894,261	34,354,342	7,943,936	89,797,015	40,812,686	629,461	7,428,953	2,927,868
Hardwoods								
White oak	55,153,727	2,300,582	2,500,405	23,761,134	10,799,400	1,002,535	10,343,958	4,445,713
Select red oak	97,516,483	2,677,779	4,115,286	52,537,400	23,878,297	719,914	9,393,979	4,193,828
Other red oak	60,135,348	2,207,730	2,199,777	23,769,473	10,803,233	1,240,393	13,846,613	6,068,129
Select hickory	8,852,912	670,700	367,745	4,298,263	1,953,560	85,425	1,028,834	448,385
Other hickory	6,266,473	1,016,915	249,594	3,071,255	1,395,887	24,549	374,152	134,121
Basswood	42,458,393	2,596,195	1,977,870	22,763,123	10,345,858	252,772	3,171,047	1,351,528
Beech	2,074,892	146,243	69,324	877,196	398,690	27,875	393,213	162,351
Yellow birch	18,765,601	1,806,225	708,609	7,309,834	3,322,314	325,937	3,734,561	1,558,121
Hard maple	110,772,803	14,358,450	4,008,922	50,409,618	22,911,145	907,119	12,814,948	5,362,601
Soft maple	88,416,305	18,844,878	2,768,828	35,467,032	16,119,732	672,770	10,497,961	4,045,104
Elm	31,105,789	3,601,568	1,544,597	14,243,817	6,473,814	347,394	3,451,265	1,443,334
Black ash	27,370,645	4,822,380	1,296,614	12,857,222	5,843,623	129,535	1,841,878	579,393
White & green ash	17,565,489	1,460,581	722,702	9,232,450	4,196,146	93,698	1,305,469	554,443
Cottonwood	1,793,794	12,699	86,923	1,045,931	475,379	11,842	110,704	50,316
Willow	2,000,372	52,701	71,585	783,618	356,156	37,140	501,152	198,020
Hackberry	169,438	30,626	8,620	81,270	36,939	1,015	7,541	3,427
Balsam poplar	1,790,031	173,657	64,722	1,000,461	454,701	3,585	63,874	29,031
Bigtooth aspen	33,368,546	2,640,613	1,037,187	18,555,898	8,433,661	94,549	1,816,491	790,147
Quaking aspen	105,932,416	15,119,383	3,469,804	51,729,881	23,511,194	498,959	8,198,032	3,405,163
Paper birch	61,536,562	8,587,770	2,371,797	30,729,452	13,966,525	273,064	4,019,351	1,588,603
River birch	625,592	71,060	20,192	254,937	115,867	7,476	107,295	48,765
Black cherry	14,985,469	2,129,319	416,960	5,377,126	2,443,882	208,221	3,207,170	1,202,791
Black walnut	1,445,608	14,337	58,471	736,606	334,789	15,140	196,814	89,451
Butternut	3,300,969	92,428	97,241	1,270,338	577,369	65,751	825,557	372,285
Other hardwoods	3,712,380	638,784	85,672	842,711	383,009	104,843	1,180,313	477,048
Noncommercial species	12,266,115	8,716,924	--	--	--	89,587	3,120,058	339,546
Total	809,382,152	94,790,527	30,319,447	373,006,046	169,531,170	7,241,088	95,552,230	38,941,644
All species	993,276,413	129,144,869	38,263,383	462,803,061	210,343,856	7,870,549	102,981,183	41,869,512

Table 74.--All live above-ground tree biomass by species group and tree biomass component, Wisconsin, 1983

(In thousand cubic feet)

Species group	All components	All live 1- to 5-inch trees	Biomass component					
			Growing stock			Cull		
			Stumps	Boles	Tops and limbs	Stumps	Boles	Tops and limbs
Softwoods								
Jack pine	1,339,733	204,432	52,732	674,286	306,452	4,745	68,667	28,419
Red pine	1,620,629	154,799	63,604	950,197	431,840	851	13,734	5,604
White pine	1,289,367	114,531	48,536	715,250	325,085	4,149	56,559	25,257
White spruce	432,845	61,848	24,211	229,860	104,471	762	8,370	3,323
Black spruce	538,730	301,700	14,850	143,261	65,126	468	11,326	1,999
Balsam fir	1,537,114	467,638	75,328	655,672	298,030	2,123	29,067	9,256
Hemlock	659,834	26,933	30,930	368,660	167,555	3,975	42,707	19,074
Tamarack	358,506	107,516	13,561	153,097	69,590	727	10,349	3,666
Eastern redcedar	24,607	8,256	654	4,689	2,132	348	7,276	1,252
Northern white-cedar	1,426,491	325,862	76,850	555,587	252,496	16,179	144,158	55,359
Other softwoods	15,039	3,879	467	4,095	1,861	254	3,285	1,198
Total	9,242,895	1,777,394	401,723	4,454,654	2,024,638	34,581	395,498	154,407
Hardwoods								
White oak	1,931,868	81,232	87,681	832,262	378,246	35,066	361,916	155,465
Select red oak	3,391,620	94,554	143,176	1,826,983	830,369	24,991	326,037	145,510
Other red oak	2,067,316	76,974	75,629	816,865	371,300	42,649	475,603	208,296
Select hickory	306,400	23,388	12,704	148,661	67,571	2,947	35,612	15,517
Other hickory	217,794	35,462	8,690	106,683	48,489	846	12,980	4,644
Basswood	2,029,711	123,496	94,621	1,088,659	494,805	12,088	151,458	64,584
Beech	86,244	6,137	2,872	36,446	16,569	1,160	16,325	6,735
Yellow birch	699,125	68,174	26,393	271,974	123,589	12,118	138,973	57,904
Hard maple	4,194,210	549,722	151,723	1,905,751	866,160	34,260	484,199	202,395
Soft maple	3,823,004	817,921	119,652	1,532,245	696,409	29,029	453,262	174,486
Elm	1,217,693	141,964	60,464	557,089	253,203	13,589	134,972	56,412
Black ash	1,168,206	205,780	55,376	548,805	249,401	5,522	78,599	24,723
White & green ash	748,626	62,328	30,792	393,487	178,828	3,991	55,588	23,612
Cottonwood	69,731	500	3,372	40,655	18,483	463	4,302	1,956
Willow	78,023	2,079	2,800	30,594	13,903	1,444	19,510	7,693
Hackberry	6,637	1,207	337	3,178	1,444	40	296	135
Balsam poplar	90,744	8,782	3,275	50,738	23,059	181	3,237	1,472
Bigtooth aspen	1,593,566	125,595	49,518	886,540	402,938	4,510	86,730	37,735
Quaking aspen	5,045,604	719,191	165,366	2,464,590	1,120,146	23,778	390,375	162,158
Paper birch	2,559,121	360,436	98,512	1,275,948	579,924	11,327	167,043	65,931
River birch	25,950	2,982	840	10,558	4,800	309	4,442	2,019
Black cherry	610,841	86,548	16,994	219,320	99,684	8,495	130,738	49,062
Black walnut	58,841	583	2,387	29,979	13,622	614	8,012	3,644
Butternut	134,416	3,756	3,956	51,728	23,517	2,675	33,624	15,160
Other hardwoods	156,095	26,803	3,601	35,484	16,130	4,394	49,622	20,061
Noncommercial species	515,629	366,457	--	--	--	3,774	131,083	14,315
Total	32,827,015	3,992,051	1,220,731	15,165,222	6,892,589	280,260	3,754,538	1,521,624
All species	42,069,910	5,769,445	1,622,454	19,619,876	8,917,227	314,841	4,150,036	1,676,031

Table 75.--Sampling errors[1/] for estimates smaller than the Unit totals of volume, net growth, removals, and area of commercial forest land, Wisconsin, 1983

Sampling error	Commercial forest land	Growing stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	Thousand cubic feet			Thousand board feet[2/]		
1	744.0	17,213.0	1,392.4	29,033.7	88,627.4	8,171.1	104,159.6
2	186.0	4,303.2	348.1	7,258.4	22,156.9	2,042.8	26,039.9
3	82.7	1,912.6	154.7	3,226.0	9,847.5	907.9	11,573.3
4	46.5	1,075.8	87.0	1,814.6	5,539.2	510.7	6,510.0
5	29.8	688.5	55.7	1,161.3	3,545.1	326.8	4,166.4
10	7.4	172.1	13.9	290.3	886.3	81.7	1,041.6
15	3.3	76.5	6.2	129.0	393.9	36.3	462.9
20	1.9	43.0	3.5	72.6	221.6	20.4	260.4
25	1.2	27.5	2.2	46.5	141.8	13.1	166.7
50	0.3	6.9	0.6	11.6	35.5	3.3	41.7
100	0.1	1.7	0.1	2.9	8.9	0.8	10.4

[1/] At the 68-percent probability level.

[2/] International 1/4-inch rule.

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Wisconsin forest statistics, 1983. Resour. Bull. NC-94. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1985. 113 p.

The fourth inventory of the timber resource of Wisconsin shows a 2 percent increase in commercial forest area and a 39 percent gain in growing-stock volume between 1968 and 1983. Presented are highlights and statistics on area, volume, growth, mortality, removals, utilization, and biomass.

KEY WORDS: Timber resource, statistics, area, volume, growth, mortality, removals.

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Resource Bulletin **NC-95**

The Private Forest Landowners of Minnesota—1982

Eugene M. Carpenter, Mark H. Hansen, and Dennis M. St. John

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Forest Service—U.S. Department of Agriculture
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St. Paul, Minnesota 55108
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THE PRIVATE FOREST LANDOWNERS OF MINNESOTA—1982

Eugene M. Carpenter, *Market Analyst, Duluth, Minnesota*,
Mark H. Hansen, *Biometrician, St. Paul, Minnesota*,
Dennis M. St. John, *Forestry Technician, Duluth, Minnesota*

Minnesota's nonindustrial, privately owned forests represent 41 percent of the total commercial forest land in the State[1] (Jakes 1980). While 82 percent of Minnesota's total commercial forest acreage is located in the northern part of the State, in the Aspen-Birch and Northern Pine Resource Units, only 62 percent of the privately held acreage is situated there (fig. 1). Nonindustrial private forest landowners (NIPFL) account for only 31 percent of the commercial forest land in these northern two survey units, but in the Central Hardwood and Prairie Units 84 percent is in private ownership.

Our study includes only private ownership units with less than 5,000 acres of forest land. Consequently, the percentages and proportions involved in the remainder of this report are based on 130,800 private ownership units with 5,100,350 forested acres, and does not include the 494,350 forest acres held in large private holdings each with 5,000 acres or more (table 1).

In northern Minnesota, these private forests help support a thriving forest industry primarily involved in the production of paper products and waferboard panels from spruce, fir, pine, and aspen. In the southeast, these ownerships contain valuable oak and other hardwoods important to the sawmill and lumber industry. Statewide, these privately owned forests provide recreational and esthetic amenities for the enjoyment of the general public as well as individual owners.

[1]*Fifty-three percent is controlled by public agencies and 6 percent is owned by forest industry. Neither awere included in this study.*

The tabulations included in this report give a broad insight into the private forest resource and those who control it—information vital to agencies, firms, and individuals responsible for decisions relative to the development and management of these lands. The results presented have been expanded from a sample to estimate the number and characteristics of all small private landownership units in Minnesota. The study complements the recently published reports containing resource acreage and volume information for the State and its four survey units (Spencer 1982, Jakes 1980, Spencer and Ostrom 1979, Jakes and Raile 1980, Hahn and Smith 1980, Vasilevsky and Hackett 1980). This ownership information will be useful to public agencies, forest industry, and others involved in planning and evaluating forest management programs, in timber procurement, in industrial development, and in assessing the land use objectives of this diverse class of owners.

The study sample is based on a random distribution of points located on aerial photographs, and is land oriented. The legal description of the photo point location was identified from County records and the owner of record determined. A questionnaire was mailed to these apparent owners and their responses provided the basis for our estimates. From these returns, the ownership units were defined as held either by individuals (persons or groups of persons) or by more formal owner entities such as partnerships, corporations, clubs, estates, and trusts. Minnesota private forest landowners are diverse in their characteristics, attitudes, reasons for owning, opinions on forest management, public and private recreational use, timber harvesting and management activity, and the perceived benefits from forest land ownership.

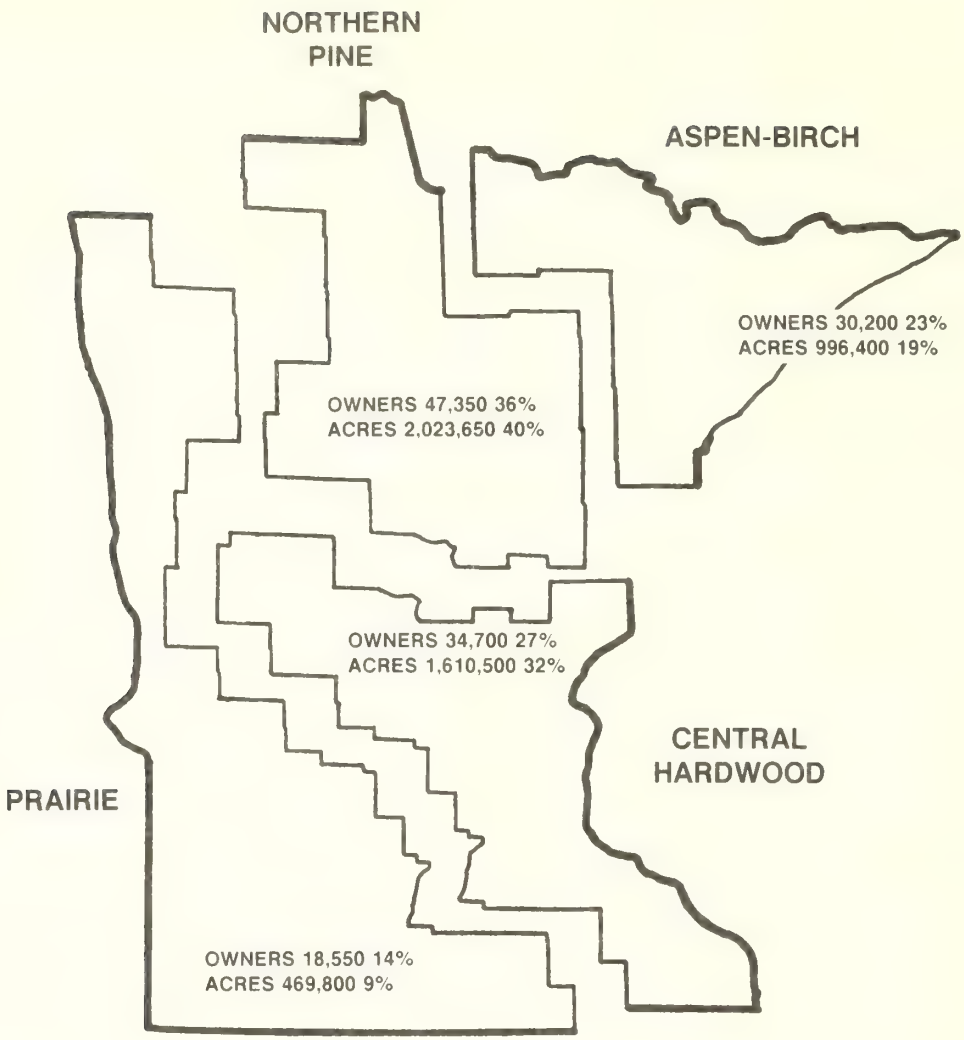

Figure 1.—*Distribution of private ownerships in Minnesota by forest survey unit.*

PRIVATE FOREST OWNERSHIP UNITS

We estimate there are 130,800 private ownership units with a total of 5,100,350 acres of commercial forest land in Minnesota (table 1). Thirty-four percent of these ownership units each have less than 10 acres of woodland and account for only 4 percent of the total commercial forest land (fig. 2). Sixty-one percent of the owners have less than 30 acres each and control 15 percent of the forest land. Ten percent of the owners each have 100 acres or more and account for 45 percent of the land in an estimated 12,800 ownership units.

The average size of holding is 39 acres when all are considered but this increases to 57 acres when ownerships of less than 10 acres are omitted. The average size of holding varies from 25 acres in the Prairie Unit to 46 acres in the Central Hardwood Unit. The Northern Pine Unit contains the most

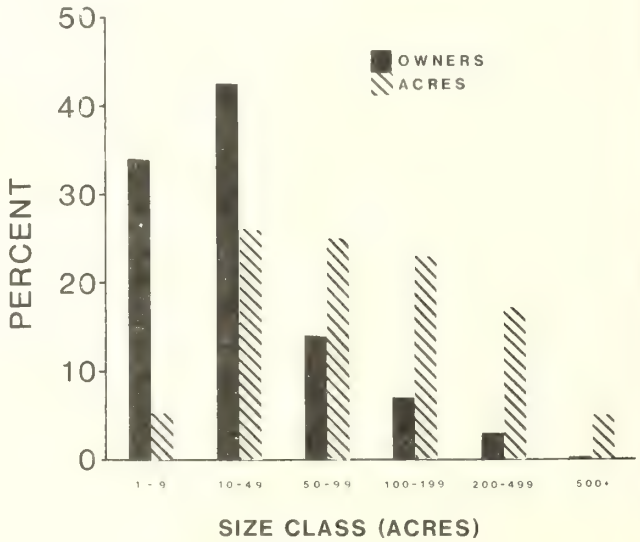

Figure 2.—*Distribution of private ownerships by size class of ownerships.*

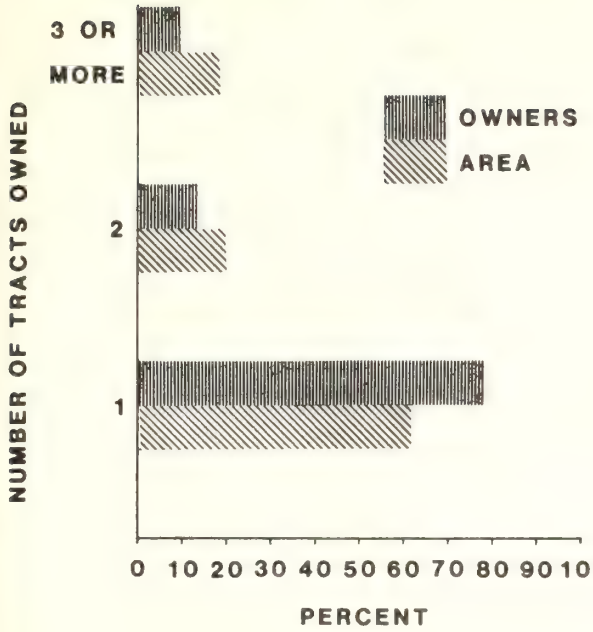

Figure 3.—*Distribution of private ownership units by number of tracts owned.*

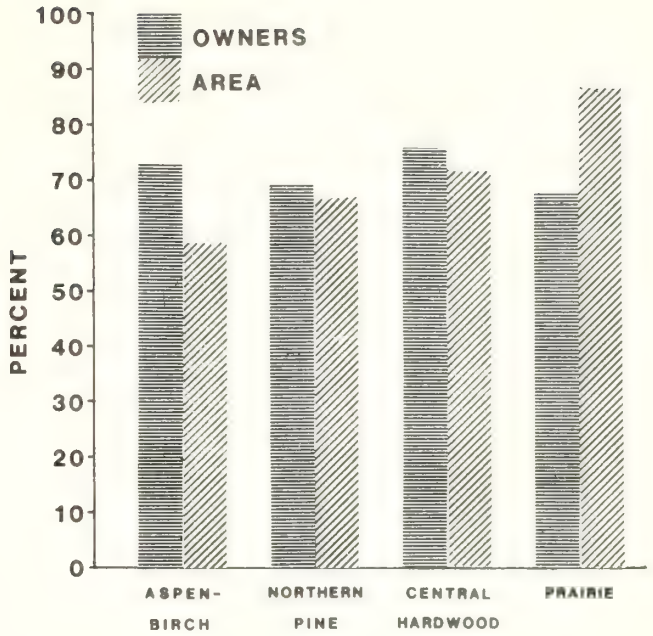

Figure 4.—*Distribution of resident ownerships by forest survey unit.*

acreage and has the most ownership units. Seventy percent of the privately held forest in Minnesota is in holdings greater than 50 acres that average 115 acres of woodland.

Number of Tracts

Very few ownership units have more than one or two distinct forested tracts. Seventy-eight percent of the units, with 62 percent of the private forest land, have only one forest tract (table 2, fig. 3). Sixty percent of the multi-tract properties have only two tracts. The two southern units have the highest proportion of ownerships with more than one tract and half of the Prairie Unit forest acreage is in multi-tract properties.

Distance from Residence

The incentive to practice more intensive forest management or to harvest timber might be increased if the owner lives close enough to the timber tracts to monitor or personally do the work. We divided the ownership units into three classes: those with the residence under 25 miles (resident), 25 to 49 miles (intermediate), and 50 miles or more (nonresident) from their nearest forest tract.

Seventy-one percent of the ownership units, with 69 percent of the commercial forest acreage, have the nearest forest tract less than 25 miles from the owner's residence (table 3). Three percent are from 25 to 50 miles away and 18 percent, with over one-fifth of the total forest area, live 50 miles or more from their nearest forest tract. Actually, a majority of the resident owners live on the tract or within 1 or 2 miles of it. Resident ownerships are fairly evenly distributed by survey unit but a slightly higher proportion of the acreage in the Prairie Unit is in resident ownerships (fig. 4). Holdings with forest tracts in the northern survey units have a slightly higher proportion in the more distant class. This pattern may result from owners having their residence in the populous Twin Cities area and owning a timber tract up North. Statewide, properties with the nearest tract 50 miles or more from the owner's residence account for over 1 million acres of commercial forest land.

Both the number of properties and acreage owned are fairly consistently distributed by size class and distance class except for those with 500 acres or more where slightly higher proportions are in the more remote class (table 4). But, the acreage involved in the latter is not large.

The distance from residence to forest is explicitly defined for one-tract properties. The owners of seventy percent of these, with 65 percent of the commercial forest land in this group, live within 25 miles of their forest (table 5). One quarter of the land in one-tract ownership (741,100 acres) is 50 miles or more away from the owner's residence. Dispersion of forested tracts does not seem to be a major factor for Minnesota owners. We calculate that only 1,850 owners with 111,350 acres may have tracts separated by any significant distance. Over half of the multitract properties have the farthest tract less than 25 miles from the owner's residence. Again, a

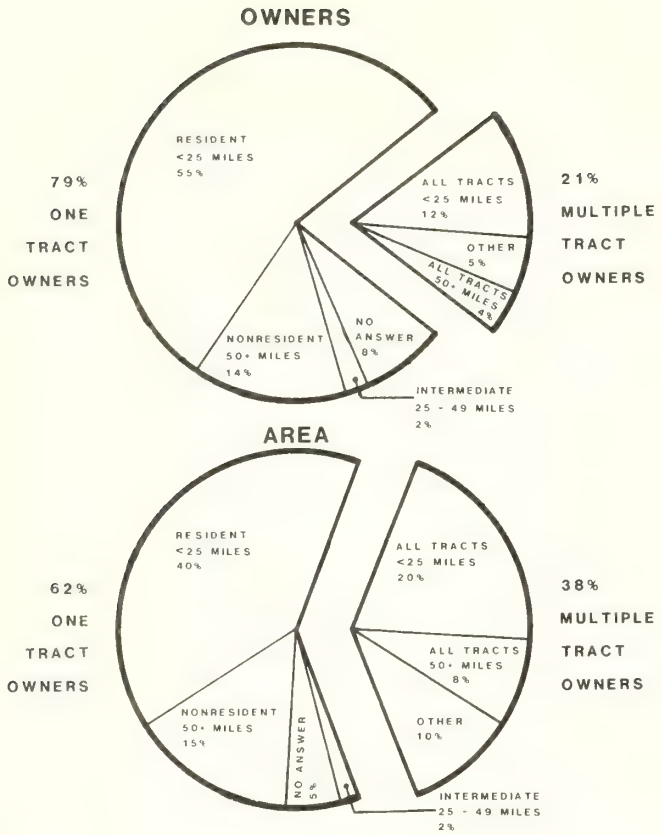

Figure 5.—*Distribution of ownership units by distance from residence and number of tracts owned.*

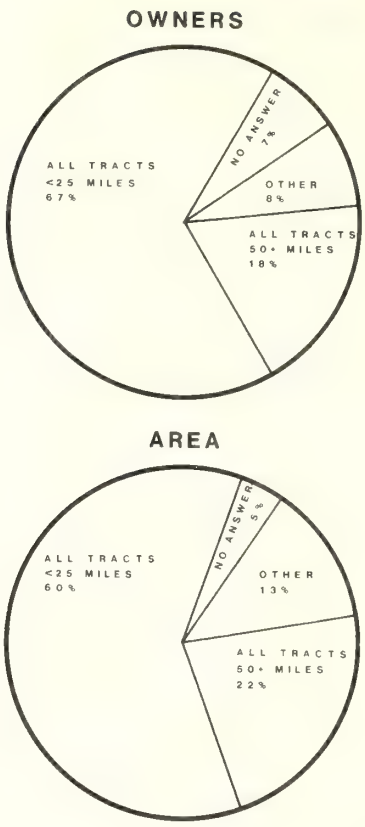

Figure 6.—*Distribution of ownership by distance from residence.*

higher proportion of multitract holdings with land in the northern areas have the farthest tract more distant from the owner's residence (table 6).

We can summarize tract ownership as follows: 79 percent of the ownership units with 62 percent of the area are in one-tract holdings (fig. 5). Twenty-one percent (with 38 percent of the area) have more than one tract, although 60 percent of these are limited to two tracts. Fifty-five percent of the owners have one-tract properties are less than 25 miles from their residence. Twelve percent have multi-tract properties with all tracts less than 25 miles away (20 percent of the area). When all properties are considered, 67 percent, with 60 percent of the area, have all tracts less than 25 miles from the owner's residence (fig. 6). Between one-fifth and one-quarter of all commercial forest land is 50 miles or more from the owner's residence. About 8 percent of the owners with 5 percent of the land did not provide this information.

Tenure

The average time a person or group owns forest land has been variously estimated to be between 10 and 15 years. Tenure can have an important influence on decisions to harvest timber or invest in forest improvement practices, so we asked owners to tell us when they first acquired woodland. We estimate about 62 percent of Minnesota's private forest landowners, with 58 percent of the area, have held their forest land 22 years or less—over one-third for 12 years or less (table 7). And, this represents a maximum tenure because many owners have acquired additional forest land after their initial acquisition.

FORM OF OWNERSHIP

Individually owned properties, which include joint party ownerships, account for 92 percent of all holdings (120,000 units) and 91 percent of the commercial forest land (4,643,050 acres) (table 8). Most of the remaining are held by corporations, partnerships, and in undivided estates. Acres in individually held properties are consistently distributed in all survey units, varying from 89 to 93 percent of the total.

Thirty percent of the ownership units are part of an active farm (fig. 7). The 39,400 farms contain 2,079,200 acres or 41 percent of the State's privately held commercial forest land, and most are held by individuals (table 9). The remaining 3,021,150 acres are held in 91,400 nonfarm, miscellaneous private properties 90 percent of which are individually

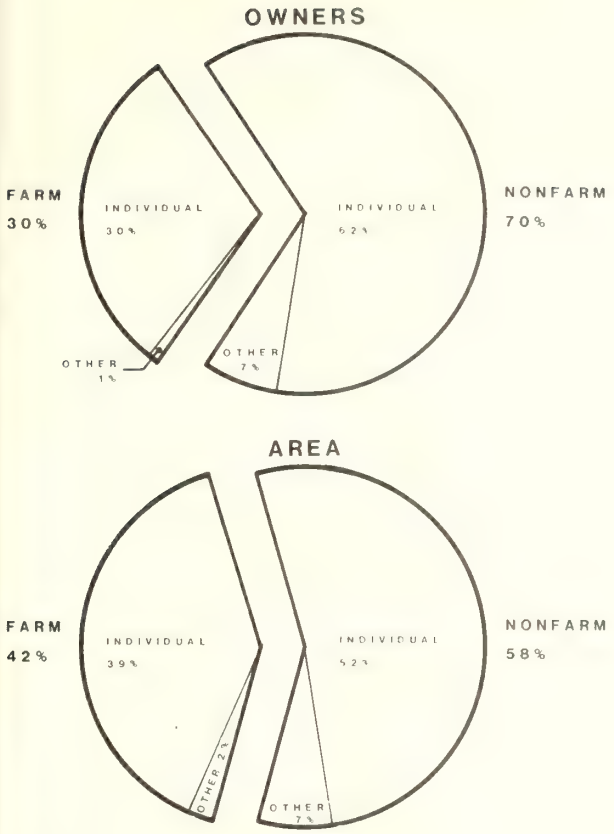

Figure 7.—*Distribution of farm and nonfarm ownership units by form of ownership.*

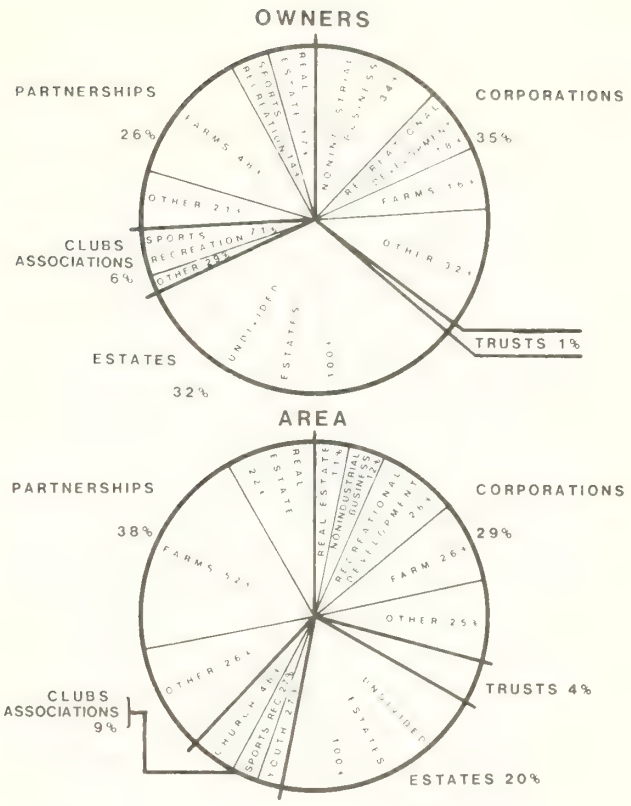

Figure 8.—*Distribution of business and group ownership units by form of ownership and nature of business.*

owned. Farm properties average 53 acres of woodland while the nonfarm properties average 33 acres.

NATURE OF BUSINESS

We estimate there are 4,450 non-farm units with 283,750 forested acres that are owned by other than individuals (tables 10 and 11). We asked these partnerships, corporations, clubs, associations, trusts and estates to tell us about the nature of their organization. By far the most (38 percent) were simply undivided estates, next were nonindustrial businesses (17 percent) and then sport-recreation clubs (13 percent). The acreage was also mostly in estates (26 percent); real estate firms or those who held the land for speculation ranked second (17 percent). Most farms that are not individually owned are held by partnerships or corporations (fig. 8). These farms have an average of 109 acres of forest land. Most clubs and associations are recreation oriented but churches account for much of the acreage.

OWNER CHARACTERISTICS

We asked the individual owners to provide information about their occupation, age, education, annual income, and early life environment. These variables have been used to predict owner interest in forest management practices, such as tree planting, harvesting, thinning, and improvement cutting.

Retired persons (22 percent) make up the largest proportion of Minnesota forest landowners followed by farmers (16 percent), with the proportion of acres owned reversed—farmers 24 percent and retired persons 20 percent (table 12). Professionals, business owners/executives, and white collar workers as a group account for 27 percent of the ownership units and 30 percent of the forest area. Professionals and business owner/executives, have average size holdings of 43 acres and 46 acres respectively, ranking behind farmers whose holdings average 58 acres (fig. 9).

Surprisingly, of the 38,550 individually owned active farms, only half (19,300) have owners who list their occupation as farmer (table 13). Thus, about 40 percent of the forested acreage on active farms is held by part-time farmers or those who may not actively work on the farm.

Personal characteristics of individual owners are shown in tables 14 to 17 and figure 10. Sixty-two percent of the owners are 45 years or older and

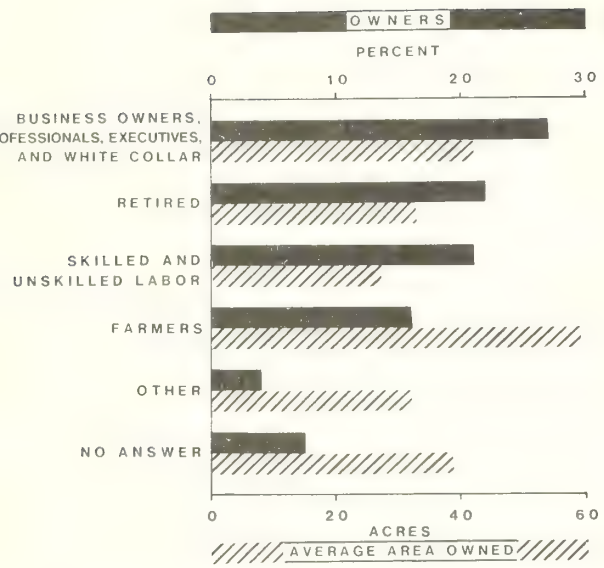

Figure 9.—*Distribution of individual owners and average area owned by owner occupation.*

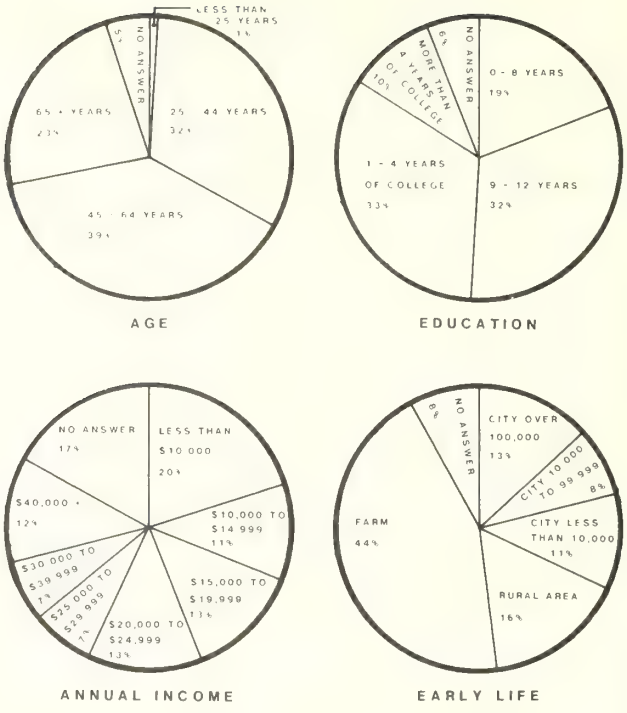

Figure 10.—*Distribution of number of owners by owner characteristics.*

almost half of the area is owned by individuals between the ages of 45 and 64 years old. Forty-three percent were educated beyond high school, while 19 percent have 8 years or less of formal schooling. When only those who answered the income question are included, nearly one-quarter earn under $10,000 annually and they own one-fifth of the forest area. Twenty-three percent earn $30,000 or more and together they hold about one-third of the area in holdings that average 57 acres each. Also, the Central Hardwood and Prairie Units have a higher proportion of owners in the upper income brackets, but their average size holding in the Prairie Unit is half of that in the Central Hardwood Unit. Nearly three-quarters of those who own land in the Prairie Unit spent their early life on a farm or in a rural area, while only 44 percent of those owning land in the Aspen-Birch Unit did.

OWNER OBJECTIVES AND ATTITUDES

Reason for Owning Forest Land

Except for cutting firewood for their own use, owners appear to have little interest in the timber production aspect of forest land ownership (table 18). Esthetic enjoyment (16 percent) and recreation (12 percent) rank as important reasons for owning woodland, but one-third of the owners have forest land just because it is part of the farm or residence. The reason for owning differs little between major harvesters and nonharvesters (table 19). Because of the popularity of cutting firewood in recent years, we divided respondents who provided information about the kind and amount of material harvested into two groups. Minor harvesters cut less than 30 cords of firewood or a very small amount of other products such as posts, poles, or saw logs, primarily for their own use. Major harvesters cut larger amounts or combinations of products. The proportion of major harvesters citing esthetic enjoyment, recreation and second home use as the primary reason for owning forest land (31 percent) is not much different than that for minor and nonharvesters (35 percent).

Owners with land in the Central Hardwood and Prairie Units say cutting firewood for their own use is important more often than those who own land in the northern units (table 20). An unusually high proportion of owners with land in the Aspen-Birch Unit cite as an important reason for owning forest land that it is "part of the residence." On the basis of acres owned, Prairie owners rank high that it is "part of the farm residence."

We will discuss what owners tell us about their future harvest plans in a later paragraph, but it is interesting to contrast primary reason for owning with future harvest intentions. Eleven percent of the

owners, who say they never intend to harvest, say cutting firewood for their own use is their most important reason for owning forest land (table 21). Obviously, they do not consider cutting a few cords of firewood as conducting a timber harvest and likely equate timber harvesting with selling a product. It may be a problem if owners do not recognize that firewood harvesting provides an excellent opportunity to improve the quality and value of their timber holding.

Relative to the commonly noted conflict between recreation use and timber harvesting, we find that owners who intend to harvest often say recreation use, esthetic enjoyment, or second home site is their most important reason for owning forest land and harvesting is less important.

Primary Benefit from Owning Forest Land

Esthetic enjoyment (29 percent) was most often indicated as the benefit owners expect to receive in the future from owning forest land (table 23). Firewood for themselves (22 percent), the next most important expected benefit, was cited by owners who control over 1 million acres of commercial forest land, followed by increase in land value (12 percent), and nonmotorized recreation (10 percent). Neither sale of firewood nor of timber products was expected to be an important benefit, even for those who plan to conduct a timber harvest (table 24). While investment was not perceived to be an important reason for owning forest land, it was recognized as having been more important in the recent past, and is expected to be even more important in the near future. This view was likely a result of increased land value prompted by the relatively high inflation rate that prevailed at the time of the study.

We found similar patterns when contrasting primary benefits from owning woodland with harvest history. Esthetic enjoyment was a major benefit received by major harvesters as well as by those who had not harvested (table 22). Again, cutting firewood for their own use was an important benefit for some who indicated they had not harvested timber. Also, even major harvesters did not rank the sale of timber products very high as a recent benefit.

Harvest History and Why People Harvest

Fifty-seven percent of the owners indicated they had harvested some material; about half of these were major harvesters (table 25). The average size of holding for major harvesters was 53 forested acres, for minor harvesters 40 acres, while those who did not harvest held an average of 30 acres of forest. Those who did not answer the harvest question nor the form of ownership question averaged only 9 acres of forest.

Twenty-nine percent of the individual major harvesters indicated the main reason they cut the material was for their own use (table 26). Many others said they were prompted to salvage dead and dying trees. Other reasons for harvesting were to cut mature timber, to thin or improve the stand, the need for money or to clear land for another use. A higher proportion of farm ownership units (72 percent) harvest than do nonfarm, but half of the nonfarm units indicated they had harvested (table 27).

Almost two-thirds of the minor harvesters cut the material for their own use and 23 percent cut to salvage dead or dying trees (table 28). Often, both of these reasons were mentioned by respondents.

Why Owners Do Not Harvest

Many nonharvesters are concerned that timber harvesting would ruin the esthetic or visual aspects of their property (17 percent) or would have a detrimental effect on hunting (10 percent) (table 29). Thirty-seven percent of the nonharvesters felt a physical characteristic of the resource would deter them from harvesting such as low volume, immature timber, poor quality or too small an area.

Harvest Plans

We asked owners to give us some indication of their harvest plans, and while nearly one-third of the individual owners said they never plan to harvest they owned only 17 percent of the individually owned commercial forest land (table 30). A high proportion of farmers (72 percent), holding nearly a million forest acres, have positive or at least indefinite harvest plans. A higher proportion of retired owners, those with a skilled trade and unskilled workers said they never plan to harvest than did other occupation groups. However, on an acreage basis, only retired people have a high proportion of acreage owned and a significant amount of land held by those who never plan to harvest. The average size of forest holding is larger (across all occupation groups except homemakers) for those with positive harvest plans than for those who never plan to harvest. Furthermore, in nearly all occupations the holding is larger, on the average, for those owners with more definite plans. Perhaps it is not surprising that a high proportion of unskilled laborers say they never plan to harvest (average holding only 6 acres of commercial forest land) nor the fact that all loggers plan to harvest their timber. Nearly half the acreage in the "never

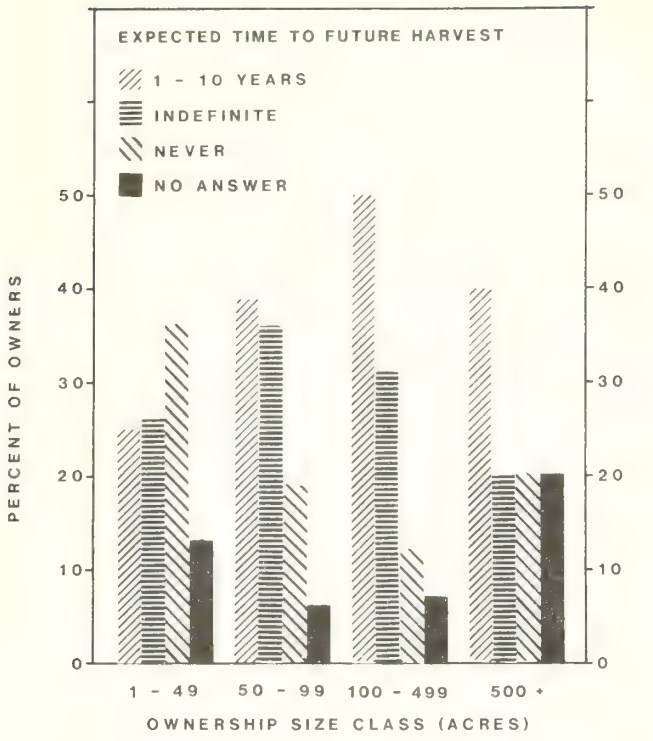

Figure 11.—*Distribution of owners by size of ownership and intention to harvest.*

harvest" category is held by retired persons or farmers, but occupation does not seem to have an important influence on harvest planning in Minnesota.

The influence of size of holding on harvest plans is further demonstrated in table 31. In the 1-49 acre size class, owners who never plan to harvest have an average holding about half the size (11 acres) of those who plan to harvest (19 acres). Eighty-two percent of the owners of 50 acres or more of forest land, who answered the question, said they would harvest. The percent of owners who never plan to harvest consistently decreases as the size of ownership increases (fig. 11).

Harvesting Practices

Landowners who have had major timber harvests personally determine which trees will be cut 63 percent of the time and control two-thirds of the land (table 32, fig. 12). But, half of them didn't indicate what cutting method they used. In fact, 56 percent of the owners did not indicate a cutting method regardless of who chose the trees to be cut. One might suspect that ignorance of forestry methods could account for some of this response. Considering only respondents who indicated a cutting method, the selection method (47 percent) was used far more than any other. Diameter limit (17 percent) and clearcutting (14 percent) were the next most popular methods. Because clearcutting is a widely used harvest3

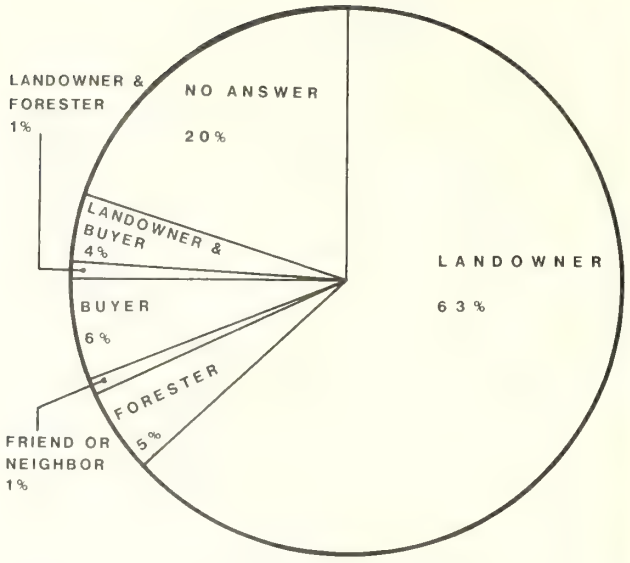

Figure 12.—*Distribution of harvesters by person selecting trees to be cut.*

method for many timber types, especially in northern Minnesota, 14 percent seems unrepresentative.

Owners indicated foresters were involved in making the determination only 6 percent of the time, that foresters used the selection method 65 percent of the time, but 18 percent of the owners didn't tell us the method foresters used. The timber buyer was involved in determining which trees to cut 10 percent of the time on ownership units controlling 15 percent of the land held by major harvesters. It appears foresters may not influence timber harvesting on private forest land in Minnesota to any great extent.

Thirty-eight percent of the net annual softwood timber removals and 63 percent of the hardwood removals in Minnesota are estimated to come from farm and other private ownerships, this includes one-third of the pulpwood, one-half of the saw logs and 81 percent of the fuelwood (Jakes 1980). Thirty-six percent of the major harvesters indicated they cut firewood, but the same proportion didn't tell us what product was harvested (table 33, fig. 13). Saw logs (32 percent) and pulpwood (23 percent) were also important products. Two-thirds of the harvesters owned less than 50 acres of commercial forest land, and 39 percent of the harvesters cut more than one product.

Improvement Cut

We asked owners if they would consider a timber sale if a whole-tree thinning method were used (not all trees harvested and tops and limbs are removed from the site). We indicated that this generally

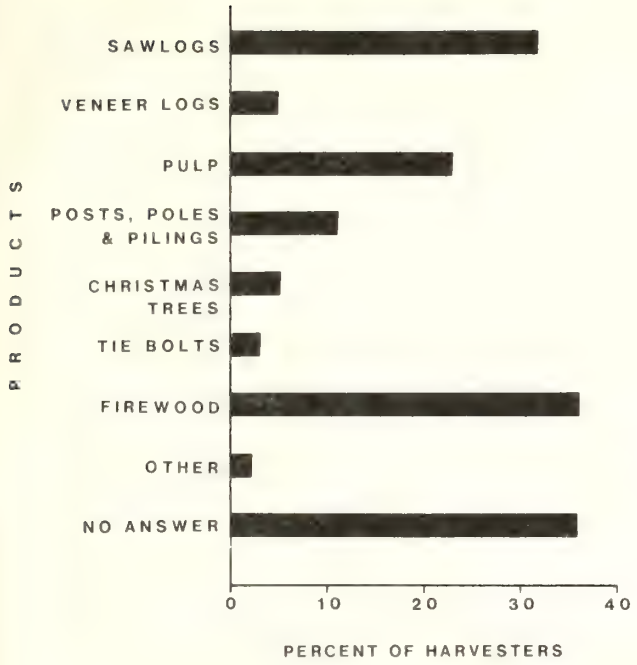

Figure 13.—*Distribution of major harvesters by products harvested.*

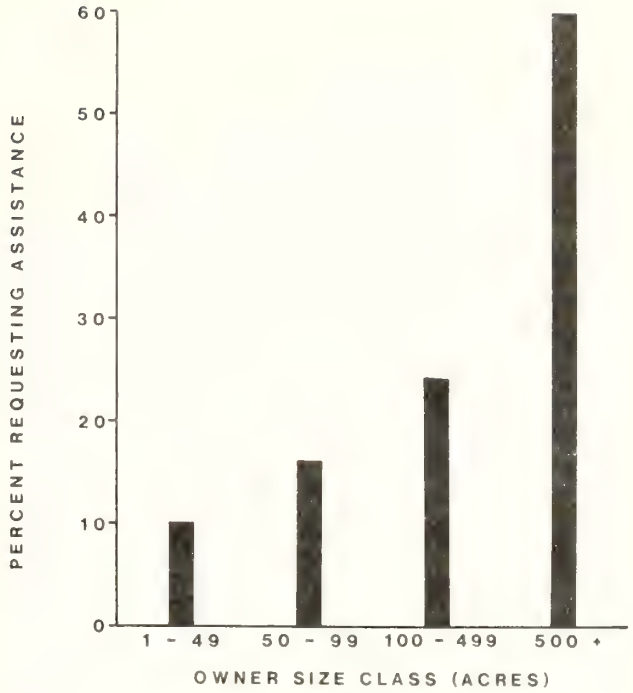

Figure 14.—*Percent of owners requesting assistance by owner size class.*

improves timber growth and quality as well as wildlife habitat. Forty-four percent of all owners (57,700), holding 61 percent of the commercial forest land (3.1 million acres), indicated they would be interested (table 34). Though not shown in the table, the larger ownership classes and nonresident owners consistently showed more interest in whole-tree thinning relative to their representation in the population. However, resident owners in the Northern Pine (13,050) and Central Hardwood (12,650) Units accounted for the largest number of interested owners.

It appears that whole-tree improvement thinning might influence timber availability. When asked about harvest plans, 31 percent of all owners (40,550) said they never plan to harvest, but 27 percent of these owners, with 43 percent of the forest land, said they would be interested in a whole-tree thinning (table 35). Again, a higher proportion of nonresidents (55 percent) were interested than residents (14 percent).

Based on the number of owners, we found those from 45 to 64 years old and those with 1-4 years of college showed the most interest in improvement cutting (table 36). In terms of acres owned, we could add to those groups the upper income and farmer-held ownerships. Relative to their proportion in the population, young owners, those with more than 4 years of college, professional workers and those with incomes of over $40,000 stood out. Obviously some of these variables are highly correlated.

FORESTRY ASSISTANCE

In an open-ended question, we asked owners to tell us about the nature of any forest management assistance they may have received and to identify the agency or individual they would contact for forestry assistance. We estimate only 12 percent of the owners, who hold 21 percent of the commercial forest land, have ever requested forestry assistance (table 37). Even though only 10 percent of all owners in the 1- to 49-acre size class have requested assistance, there are so many owners in this size class that it contains nearly two-thirds of all assisted owners. In a size class with fewer owners, such as the owners with 500 acres or more, 60 percent of the owners in the size class are assisted, but their *numbers* are relatively few (table 38, fig. 14). The 100- to 499-acre class accounts for one-half of the acreage in assisted ownerships. Resident owners (0-24 miles) account for most of the forestry assistance activity (74 percent), but 28 percent of the acreage in assisted ownerships is in nonresident holdings (50+ miles) (table 39).

Forty-three percent of the assisted owners requested a forest management plan for their property or more than one kind of assistance which we classed as general management assistance (table 40). General assistance was popular for all sizes of ownerships but was slightly more popular with the 1- to 49-acre class. Timber sale and valuation assistance (24 percent) was second in importance. Similar distributions held for resident owners; nonresidents

also listed general management most often, but timber stand improvement assistance replaced sales and valuation as their next most popular activity (table 41).

Over 80 percent of the assisted owners (13,350 owners) were major or minor harvesters (table 42). This indicates that assisted owners are generally active as timber suppliers. Of course, some assistance was related to the timber sales process.

In summary, we found nearly two-thirds of the assisted owners owned less than 50 acres of commercial forest land, three-quarters were residents and two-thirds requested general management or timber sale valuation assistance.

Who Requests Forestry Assistance?

Owner characteristics may provide some insight into who requests forestry assistance (tables 43 to 46). Relative to their proportion in the population (32 percent), the 25- to 44-year age group accounted for nearly half of the owners who requested assistance (46 percent) (table 43). Professionals, farmers, and those with skilled trades were highly motivated. Professionals with 23 percent of acres owned by assisted owners were especially important, followed by farmers (20 percent) and retired (15 percent) (table 44). Education seems to have a positive impact in creating owner interest with 63 percent of the assisted owners having had some education beyond high school (table 45). They own 72 percent of the acreage in assisted ownerships.

The influence of income is less clear as quite a few assisted owners didn't answer the income question (table 46). Owners in the $20 to $25,000 group and the $40,000-plus group were those most active in requesting assistance.

Where Owners Go For Help

Forty-five percent of the owners, holding 45 percent of the commercial forest acres in Minnesota, did not know where to go for forestry assistance (table 47). Another 26 percent with 19 percent of the acres, did not answer the question. When a source of assistance was cited, the State forestry department (DNR) was overwhelmingly recognized. The proportion of owners citing a source increased as the size of ownership increased.

Most of those who had sought assistance in the past could cite an agency they would go to for help; about half said they would contact a State forester and only 14 percent said they didn't know who they would contact (table 48). For the 80 percent of all owners who had not sought forestry assistance only 25 percent named an agency or individual to contact for forestry information. Again, most of these cited the State forestry agency. Since few owners have forest land for the purpose of growing trees under a forest management system, it is not surprising most are indifferent or ignorant of a specific source of management assistance.

RECREATION AND PUBLIC USE

Recreation, whether considered a prime reason for owning forest land or not, is an important use of forested properties. About one-third of the owners indicated recreation, second-home use or esthetic enjoyment was their most important reason for owning their woodland and a like proportion listed these uses as their second most important reason (double counting possible). But 88 percent of those with ownerships, containing 92 percent of the commercial forest land, indicated that their property was used by themselves, their family or close friends or by the general public for some form of recreation (table 49). Thirty-two percent of the owners, holding 37 percent of the forest land, indicate that the public is permitted to use their land; 20 percent did not answer the public use question. Hunting is most often shown as a recreation use by the owner or close friends (49 percent) followed by hiking or skiing (40 percent) and berry picking (36 percent) (table 50). Four-fifths of all owners profess to use their land for one or more kinds of recreation and those ownerships contain 86 percent of the commercial forest land in Minnesota.

Public use is allowed by an estimated 42,000 owners, or about one-third of all owners, but an additional 35,300 owners (27 percent) did not answer the question (table 51). Hunting is the most prevalent public use but only 14 percent of all owners would allow the public to hunt on their land.

Private and public recreation was distributed fairly evenly across survey units, although hunting was slightly less favored by owners of forest land in the Aspen-Birch Unit (table 52). Likewise, the percentage of owners allowing public use is fairly constant for all sizes of ownership, except the very largest ownerships are more likely to allow public use (table 53).

Posted Land

Forty-one percent of the owners indicated they do not allow public use of their land, but only half of these post their land. Only 31 percent of all owners formally restrict public use through posting, 60 percent do not post (table 54). A higher proportion of owners with land in the Central Hardwood and Northern Pine Units post their land than do those in other units.

To control hunting or access are the main reasons owners post their land (table 55). But posting does not mean the land is not available for public use since 5,950 owners who post their land also indicate public use is permitted.

CONCLUSIONS

Few nonindustrial private forest landowners own forest land primarily for the production of timber. Many owners cut firewood for their own use but they do not consider this a timber harvest, possibly because they often report removing only dead or dying trees. When harvesting is done, foresters selected the trees for cutting only 6 percent of the time. Full-tree thinning may provide an opportunity to increase timber harvest, especially on nonresident ownerships. Harvesting may increase because 82 percent of the owners of 50 acres or more of forest land (70 percent of the forest acreage) said they plan to harvest.

Recreation is an important use of nonindustrial private forests. Four-fifths of all owners indicated they use their land for one or more forms of recreation, but we estimated public recreation is permitted on only one-third of the ownership units. Hunting was the most popular recreation use.

Owners of about one-fifth of the commercial forest land have requested professional forestry assistance. Usually owners contacted the Minnesota Department of Natural Resources for assistance and most assisted owners live on or near their forest tract. Nearly half of those who requested assistance were in the 25- to 44-year age group, but over half of the acreage was held by those in the 45- to 64-year age group. One-third of the forest land has been held by the current owner for 12 years or less, thus, those responsible for encouraging better forest management on nonindustrial private forests are faced with an on-going promotional and service effort.

ACKNOWLEDGEMENTS

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Special recognition is due Dr. Jerrold M. Peterson, Director, Bureau of Business and Economic Research, University of Minnesota, Duluth, for conducting the data collection portion of the study.

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APPENDIX

STUDY METHOD

To focus our study more directly on the relatively small private forest holdings, we eliminated from the study all forest industry firms, and all individual, industrial, commercial, and business ownerships with 5,000 acres or more of forest land. The estimated total acreage of commercial forest land in private ownerships was obtained from the Minnesota forest survey (Jakes 1980). The commercial forest base for nonindustrial private forest landowners in each survey unit is shown in the following tabulation.

Unit	All private ownerships	Large private ownerships		Small private ownerships
	(Acres)	(Number)[2]	(Acres)	(Acres)
Aspen-Birch	1,319,600	13	323,000	996,400
Northern Pine	2,175,700	6	152,050	2,023,650
Central Hardwood	1,622,200	3	11,700	1,610,500
Prairie	477,200	1	7,400	469,800
Total	5,594,700	17	494,350	5,100,350

The sample of small private ownerships for our study was randomly drawn from private ownerships that had survey plots placed on their land in the Statewide timber inventory conducted by the North Central Forest Experiment Station. Thus, our study design is derived from the sampling design used in the Station's forest inventory program.

Forest Inventory Analysis crews obtained the name and mailing address of each owner of the 4,112 privately owned forested field plots in the State. These plots were systematically distributed within each of the four survey units. The exclusion of large landowners reduced the number of nonindustrial private landowner plots to 3,925. From these plots, a random sample of 2,352 were selected and the owners contacted for information. Through multiple mailings, 1,437 usable questionnaires were returned for a response rate of 61 percent. The design of the study is land oriented and the probability that a particular forest ownership would be sampled depended on the rate of sampling and the acreage of commercial forest land owned. Each survey unit had a different rate of sampling, and the area represented by each plot is determined by dividing the commercial forest area in nonindustrial ownership in the unit by the number of field plots represented by valid questionnaires.[3]

There were four sampling units in Minnesota:

Unit	Usable questionnaires	Usable survey plots	Average acreage/plot
	Number		
Aspen-Birch	426	438	2,275
Northern Pine	423	432	4,684
Central Hardwood	424	424	3,798
Prairie	164	164	2,865
All Units	1,437	1,458	3,498

The probability that a given owner would be sampled is directly proportional to the acres of commercial forest land owned. Therefore, it was necessary to weight the responding ownership units to estimate the total number of ownerships in Minnesota. This procedure can be stated as:

$$N = \frac{CFL_p}{N_r} < \frac{1}{A_i}$$

N = estimated number of private owners in the sampling area.

CFL_p = the acres of private commercial forest land in the sampling area.

N_r = the number of respondents in the sampling area.

A_i = the acres of commercial forest land owned by an individual respondent.

The ΣN then equals the estimated number of nonindustrial private owners in the State. This is an unbiased estimate of the total number of persons who own commercial forest land in Minnesota.

Data collection for this study was accomplished by the Bureau of Business and Economic Research, University of Minnesota, Duluth, Minnesota under the direction of Dr. Jerrold M. Peterson, Director. A multiple mailing system included sending a cover letter explaining the purpose of the study and a questionnaire to each sample owner followed in approximately 10 days by a reminder post card. Ten days to 2 weeks later a second letter and questionnaire were sent to nonrespondents followed in 2 weeks by a final reminder post card. Owners having more than one survey plot were sent only one questionnaire and their response was weighted proportional to the number of plots on their land.

Updating the landowner address file, and data coding for the Aspen-Birch and Northern Pine

[2]*Subsidiaries of major nonforest corporations are not counted separately. Some owners control property in more than one unit.*

[3]*Copies of questionnaires are available from: Publications, USDA Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota 55108.*

Units, was accomplished with cooperation from the Arrowhead Regional Development Commission, Duluth, Minnesota, under the direction of Stephen Krmpotich and Dan Peterson.

Updating the landowner file and the extension of the study to include the Central Hardwood and Prairie Survey Units was accomplished with cooperation of Dr. Paul Ellefson and Michael Kilgore, Department of Forest Resources, College of Forestry, University of Minnesota, St. Paul, Minnesota. Assistance was also provided by Dr. William J. Craig, Assistant Director, Center for Urban and Regional Affairs, University of Minnesota, Minneapolis, Minnesota, and the Division of Forestry, Department of Natural Resources, St. Paul, Minnesota.

SAMPLING ERRORS

It is important to have a measure of the variation associated with the estimates shown in the tabulations because every owner and every acre were not sampled. A measure of the reliability of an estimate, based on our sample, is given by the sampling error. We have included sampling errors for selected categories to provide a means for evaluating the survey results; the smaller the sampling error the greater the reliability of the estimate. Sampling errors for estimates of acres of commercial forest land owned were calculated using the estimated sampling error for the total of a simple random sample, and sampling errors for estimates of number of owners were calculated using the estimated sampling error for the total of an unequal probability sample (Cochran 1977).

A sampling error of 10 percent for a particular table entry means that 2 out of 3 times the true value for the population would lie within an interval constructed to represent a range of 90 to 110 percent of the value shown. Three things should be considered with regard to sampling error when looking at any table value. First, estimates for large areas are more reliabile than for smaller areas because of the larger number of samples involved. Thus estimates for the entire state have lower sampling errors than for an individual unit.

Second, because the design sampled area with equal probability and owners with unequal probability the estimates of area generally have lower sampling errors. Finally, again because of the unequal probability sampling of owners, estimates of the number of owners having small ownerships is greater than the number of owners having large ownerships. Thus when small forest holdings (those under 10 acres) are included in the study population the sampling error increases substantially.

The sampling errors (in percent) are:

Unit	Estimates of acres of private commercial forest land	Estimates of the number of owners of provate commercial forest land	Estimates of the number of owners holding 10 or more acres
Aspen-Birch	0.76	14.5	5.1
Northern Pine	1.16	9.1	5.9
Central Hardwood	1.59	7.7	5.1
Prairie	3.30	17.8	8.5
All Units	0.65	6.9	3.1

DEFINITION OF TERMS

Clearcutting.—The method of harvesting and regenerating timber in which the area is cut clear in the literal sense of the word; virtually all the trees, large and small, are removed. The term is often erroneously applied to any type of cutting in which all the merchantable timber is removed.

Commercial forest land.—Land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. The minimum area for classification of commercial forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas are included if less than 120 feet wide. (Note: Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Diameter limit.—The method of harvesting and regenerating timber in which all trees above a specific diameter are removed.

Farm.—An ownership unit which the respondent designated as an active farm.

Forest industries.—Companies or individuals operating wood-using plants.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Major harvest.—The cutting in the most recent harvest of more than 30 cords of firewood or 3,000 board feet of saw logs, or large amounts of posts, poles, or Christmas trees primarily for sale to others.

Minor harvest.—The cutting in the most recent harvest of less than 30 cords of firewood, 3,000 board feet of saw logs, or small amounts of posts, poles, or Christmas trees primarily for own use.

Miscellaneous private land.—Privately owned land other than forest-industry and farmer-owned land.

Nonresident.—An owner living 50 miles or more from the nearest forest tract owned.

Ownership size class.—The amount of commercial forest land owned by one owner, regardless of the number or parcels.

Ownership unit.—Forested property owned by one owner regardless of the number of tracts or parcels involved. The amount of forest land declared by the respondent to be owned by the person, estate, partnership, corporation, club or association to whom the questionnaire was addressed.

Owner tenure.—The length of time a property has been held by the owner.

Posted land.—Ownerships displaying signs indicating public trespass or admittance is not allowed.

Private commercial forest land.—All commercial forest land other than that owned by federal, state, or local governments or their agencies.

Pulpwood.—Any log from which woodpulp is to be made; usually measured in bolts of 4, 5, or 8 feet, and somewhat smaller in diameter than saw logs or veneer logs.

Resident.—An owner living less than 25 miles from the nearest tract owned.

Sawtimber trees.—Live trees of commercial species that are (a) at least 9 inches in d.b.h. for softwoods or 11 inches for hardwoods, and (b) that contain at least one 12-foot or two noncontiguous 8-foot merchantable saw logs, and that meet regional specifications for freedom from defect.

Selection system.—The method of harvesting and regenerating timber in which trees of all sizes are harvested. However, in practice, frequently only the oldest or largest trees in a stand are harvested. Trees are taken singly or in small groups, but the entire stand is never cleared completely in a single operation.

Softwoods.—Coniferous trees, usually evergreen, with needles or scalelike leaves.

Stand.—A growth of trees on forest land.

Timber removals.—The volume of timber harvested in logging or in cultural operations such as timber stand improvement, land clearing, or changes in land use.

Timber salvage.—Removals of down, damaged, or diseased trees.

Veneer log.—Any log from which veneer is to be made, by peeling (rotary cutting) or slicing.

TABLE TITLES

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Table 1.--Estimated number of private ownership units and area of commercial forest land owned, by size class and forest survey unit, Minnesota, 1982

Size class (acres)	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total		Sampling error
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Percent
					OWNERS						
1-9	13,500	45	13,600	29	8,100	23	9,250	50	44,450	34	18
10-29	6,350	21	14,100	30	9,900	29	4,600	25	34,950	27	8
30-49	4,350	15	7,700	16	6,000	17	1,950	11	20,000	15	6
50-69	1,600	5	2,850	6	2,800	8	900	5	8,150	6	8
70-99	1,900	6	3,900	8	3,800	11	850	4	10,450	8	6
100-199	1,900	6	3,650	8	3,050	9	800	4	9,400	7	5
200-499	550	2	1,400	3	1,000	3	200	1	3,150	3	6
500-999	50	*	100	*	50	*	*	*	200	*	16
1000-4999	*	*	50	*	*	*	*	*	50	*	22
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100	6
					ACRES OWNED						
1-9	36,400	4	60,900	3	45,550	23	37,250	50	180,100	4	13
10-29	106,950	11	224,850	11	170,900	29	74,500	25	577,200	11	7
30-49	163,800	17	281,100	14	220,300	17	71,600	11	736,800	15	6
50-69	91,000	9	168,650	8	155,750	8	51,550	5	466,950	9	8
70-99	152,400	15	313,850	16	300,050	11	65,900	4	832,200	16	6
100-199	243,400	24	463,750	23	387,450	9	100,250	4	1,194,850	23	5
200-499	150,150	15	379,400	19	269,700	3	57,300	1	856,550	17	6
500-999	34,100	3	79,650	4	34,200	*	5,700	*	153,650	3	15
1000-4999	18,200	2	51,500	2	26,600	*	5,750	*	102,050	2	21
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100	0.65

* Fewer than 25 owners or less than 0.5 percent.

Table 2.--Estimated number of private ownership units and acres of commercial forest land owned, by number of tracts and forest survey unit, Minnesota, 1982

Number of tracts	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
1	25,850	86	38,350	81	25,100	72	13,450	73	102,750	78
2	2,300	8	4,900	10	6,300	18	3,200	17	16,700	13
3 or more	1,900	6	4,100	9	3,300	10	1,900	10	11,200	9
No answer	150	*	-	-	-	-	-	-	150	*
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					ACRES OWNED					
1	605,150	61	1,321,000	65	979,950	61	234,900	50	3,141,000	62
2	195,650	19	374,750	19	364,650	23	111,700	24	1,046,750	20
3 or more	186,500	19	327,900	16	265,900	16	123,200	26	903,500	18
No answer	9,100	0	-	-	-	-	-	-	9,100	*
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100

* Less than 0.5 percent.

Table 3.--Estimated number of private ownership units and acres of commercial forest land owned, by distance from residence to nearest forest tract and forest survey unit, Minnesota, 1982

Distance from residence (miles)	Aspen-Birch			Northern Pine			Central Hardwood			Prairie			Total		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
							OWNERS								
0-24	21,900	73	20	32,800	69	13	26,150	76	10	12,600	68	15	93,450	71	8
25-49	700	2	28	1,750	4	36	450	1	37	1,000	5	66	3,900	3	25
50+	6,100	20	17	10,000	21	18	5,300	15	19	1,550	9	53	22,950	18	10
No answer	1,500	5	30	2,800	6	32	2,800	8	37	3,400	18	84	10,500	8	34
Total	30,200	100	15	47,350	100	10	34,700	100	9	18,550	100	19	130,800	100	6
							ACRES OWNED								
0-24	589,200	59	2	1,353,800	67	5	1,158,500	72	5	409,650	87	8	3,511,150	69	2
25-49	52,300	5	21	70,250	3	26	45,600	3	29	11,450	2	50	179,600	4	13
50+	284,350	29	9	477,800	24	10	330,450	20	10	37,250	8	28	1,129,850	22	5
No answer	70,550	7	19	121,800	6	19	75,950	5	22	11,450	3	50	279,750	5	11
Total	996,400	100	.76	2,023,650	100	1.16	1,610,500	100	1.59	469,800	100	3.29	5,100,350	100	.65

Table 4.--Estimated number of private owners and acres of commercial forest land owned, by distance from residence to nearest forest tract and size class of ownership, Minnesota, 1982

Distance from residence (miles)	Size class of ownership									
	1-49 Acres		50-99 Acres		100-499 Acres		500+ Acres		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	71,150	72	12,950	70	9,200	73	150	60	93,450	71
25-49	2,900	3	600	3	400	3	*	*	3,900	3
50+	16,150	16	4,350	23	2,350	19	100	40	22,950	18
No answer	9,200	9	700	4	600	5	*	*	10,500	8
Total	99,400	100	18,600	100	12,550	100	250	100	130,800	100
					ACRES OWNED					
0-24	1,007,450	68	885,650	68	1,486,750	73	131,300	51	3,511,150	69
25-49	54,150	3	47,700	4	67,900	3	9,850	4	179,600	4
50+	317,250	21	315,900	24	405,300	20	91,400	36	1,129,850	22
No answer	115,250	8	49,900	4	91,450	4	26,150	9	279,750	5
Total	1,494,100	100	1,299,150	100	2,051,400	100	255,700	100	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 5.--Estimated number of private ownership units and acres of commercial forest land owned, by distance from residence, Minnesota, 1982

Distance from residence (miles)	Owners of one tract		Owners of more than 1 tract			
			Distance to:			
			Nearest tract		Farthest tract	
	Number	Percent	Number	Percent	Number	Percent
			OWNERS			
0-24	71,800	70	21,650	78	15,500	56
25-49	3,150	3	750	2	1,550	5
50+	17,900	17	5,050	18	6,800	24
No answer	9,900	10	450	2	4,050	15
Total	102,750	100	27,900	100	27,900	100
			ACRES OWNED			
0-24	2,046,800	65	1,464,350	75	1,034,150	53
25-49	124,600	4	55,000	3	152,000	8
50+	741,100	24	388,750	20	500,100	26
No answer	228,500	7	51,350	2	263,950	13
Total	3,141,000	100	1,950,250	100	1,950,250	100

Table 6.--Estimated number of private owners of more than one tract and acres of commercial forest land owned, by distance from residence to farthest tract and forest survey unit, Minnesota, 1982

Distance to farthest tract (miles)	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	1,700	41	4,000	44	5,950	62	3,850	75	15,500	56
25-49	650	15	350	3	200	2	350	7	1,550	5
50+	1,550	38	3,600	40	1,550	16	100	2	6,800	24
No answer	300	7	1,050	13	1,900	20	800	16	4,050	15
Total	4,200	100	9,000	100	9,600	100	5,100	100	27,900	100
					ACRES OWNED					
0-24	166,100	44	341,950	49	345,650	55	180,450	77	1,034,150	53
25-49	45,500	12	60,900	9	34,200	5	11,450	5	152,050	8
50+	147,850	38	220,150	31	117,750	19	14,350	6	500,100	26
No answer	22,750	6	79,650	11	132,900	21	28,650	12	263,950	13
Total	382,200	100	702,650	100	630,500	100	234,900	100	1,950,250	100

Table 7.--Estimated number of private ownerships and acres of commercial forest land owned, by date of acquisition and form of ownership, Minnesota, 1982

Year acquired	Individuals		Others		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				OWNERS				
1980-1982	4,600	4	450	8	-	-	5,050	4
1970-1979	46,600	39	1,450	26	50	1	48,100	37
1960-1969	26,100	22	1,400	26	-	-	27,500	21
1950-1959	16,100	13	400	7	-	-	16,500	13
1940-1949	12,750	11	250	5	-	-	13,000	10
Prior to 1940	9,100	7	1,050	19	-	-	10,150	7
No answer	4,750	4	500	9	5,250	99	10,500	8
Total	120,000	100	5,500	100	5,300	100	130,800	100
				ACRES OWNED				
1980-1982	131,000	3	5,750	1	-	-	136,750	3
1970-1979	1,492,700	32	117,450	30	2,850	5	1,613,000	32
1960-1969	1,111,550	24	92,050	23	-	-	1,203,600	23
1950-1959	724,200	16	45,700	11	-	-	769,900	15
1940-1949	603,200	13	26,200	7	-	-	629,400	12
Prior to 1940	369,050	8	75,750	19	-	-	444,800	9
No answer	211,350	4	35,100	9	56,450	95	302,900	6
Total	4,643,050	100	398,000	100	59,300	100	5,100,350	100

Table 8.--Estimated number of private ownership units and acres of commercial forest land owned, by form of ownership and forest survey unit, Minnesota, 1982

Form of ownership	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Individual	29,550	98	45,400	96	30,750	89	14,300	77	120,000	92
Partnership	*	*	500	1	650	2	300	2	1,450	1
Corporation	200	1	1,000	2	300	1	400	2	1,900	2
Club/ass'n	*	*	350	1	-	-	-	-	350	*
Trust	-	-	-	-	50	*	-	-	50	*
Undivided estate	350	1	100	*	1,000	3	300	2	1,750	1
No answer	100	*	-	-	1,950	5	3,250	17	5,300	4
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					ACRES OWNED					
Individual	928,200	93	1,840,950	91	1,458,550	90	415,350	89	4,643,050	91
Partnership	4,550	1	70,250	3	56,950	4	20,100	4	151,850	3
Corporation	29,550	3	60,900	3	15,200	1	11,450	3	117,100	2
Club/ass'n	2,250	*	32,800	2	-	-	-	-	35,050	1
Trust	-	-	-	-	15,200	1	-	-	15,200	*
Undivided estate	18,200	2	18,750	1	30,400	2	11,450	2	78,800	2
No answer	13,650	1	-	-	34,200	2	11,450	2	59,300	1
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100

* Less than 0.5 percent.

Table 9.--Estimated number of farm and non-farm ownership units and acres commercial forest land owned, by form of ownership, Minnesota 1982

Form of ownership	Farm				Non-farm				Total			
	Owners	Percent	Acres	Percent	Owners	Percent	Acres	Percent	Owners	Percent	Acres	Percent
Individuals	38,100	96	1,958,300	94	81,900	90	2,684,750	89	120,000	92	4,643,050	91
Business and group ownerships												
Partnerships	700	2	79,450	4	750	1	72,400	2	1,450	1	151,850	3
Corporations	300	1	30,100	1	1,600	2	87,000	3	1,900	1	117,100	2
Clubs/ass'n	-	-	-	-	350	*	35,050	1	350	*	35,050	1
Trusts	-	-	-	-	50	*	15,200	1	50	*	15,200	*
Estates	50	*	4,700	*	1,700	2	74,100	2	1,750	1	78,800	1
Subtotal	1,050	3	114,250	5	4,450	5	283,750	9	5,500	4	398,000	8
No answer	250	1	6,650	*	5,050	5	52,650	2	5,300	4	59,300	1
All owners	39,400	100	2,079,200	100	91,400	100	3,021,150	100	130,800	100	5,100,350	100

* Less than 0.5 percent

Table 10.--Estimated number of business or group ownerships by nature of business and form of ownership, Minnesota, 1982

Nature of business	Form of ownership											
	Partnerships		Corporations		Clubs/ass'n		Trusts		Estates		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	OWNERS											
Nonforest industry	-	-	50	3	-	-	-	-	-	-	50	1
Nonindustrial business	100	13	650	41	-	-	-	-	-	-	750	17
Real estate/speculation	250	33	100	6	-	-	-	-	-	-	350	8
Recreation development	-	-	350	22	-	-	-	-	-	-	350	8
Timber management	*	*	-	-	-	-	-	-	-	-	*	*
Sports/recreation clubs	200	27	100	6	250	72	*	*	-	-	550	13
Conservation clubs	-	-	-	-	-	-	50	100	-	-	50	1
Youth organizations	-	-	-	-	50	14	*	*	-	-	50	1
Churches	-	-	50	3	50	14	-	-	-	-	100	2
Educational institutions (nonpublic)	-	-	-	-	-	-	-	-	-	-	-	-
Estates	-	-	-	-	-	-	-	-	1,700	100	1,700	38
No answer	200	27	300	19	-	-	-	-	-	-	500	11
Nonfarm subtotal	750	100	1,600	100	350	100	50	100	1,700	100	4,450	100
Farms	700		300		-		-		50		1,050	
Total	1,450	26	1,900	35	350	6	50	1	1,750	32	5,500	100

* Fewer than 25 owners or less than 0.5 percent.

Table 11.--Estimated acres of commercial forest land in business or group ownerships by nature of business and form of ownership, Minnesota, 1982

Nature of business	Form of ownership											
	Partnerships		Corporations		Clubs/ass'n		Trusts		Estates		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	ACRES OWNED											
Nonforest industry	-	-	6,950	8	-	-	-	-	-	-	6,950	2
Nonindustrial business	4,700	6	14,500	17	-	-	-	-	-	-	19,200	7
Real estate/speculation	33,950	47	13,150	15	-	-	-	-	-	-	47,100	17
Recreation development	-	-	30,150	35	-	-	-	-	-	-	30,150	11
Timber management	9,350	13	-	-	-	-	-	-	-	-	9,350	3
Sports/recreation clubs	7,600	11	10,750	12	9,350	27	3,800	25	-	-	31,500	11
Conservation clubs	-	-	-	-	-	-	7,600	50	-	-	7,600	3
Youth organizations	-	-	-	-	9,350	46	3,800	25	-	-	13,150	5
Churches	-	-	2,250	3	16,350	27			-	-	18,600	6
Educational institutions (nonpublic)	-	-	-	-	-	-	-	-	-	-	-	-
Estates	-	-	-	-	-	-	-	-	74,100	100	74,100	26
No answer	16,800	23	9,250	10	-	-	-	-	-	-	26,050	9
Nonfarm subtotal	72,400	100	87,000	100	35,050	100	15,200	100	74,100	100	283,750	100
Farms	79,450		30,100		-		-		4,700		114,250	
Total	151,850	38	117,100	29	35,050	9	15,200	4	78,800	20	398,000	100

Table 12.--Estimated number of individual owners and acres of commercial forest land owned, by occupation and forest survey unit, Minnesota, 1982

Occupation	Aspen-Birch		Northern Pine		Central Hardwood		Praire		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Professional	4,550	15	5,350	12	2,650	8	600	3	13,150	11
Executive	1,000	3	6,450	14	1,900	6	1,300	7	10,650	8
Retired	7,400	25	10,500	22	7,000	21	3,650	21	28,100	22
White collar	2,900	10	4,500	10	1,900	6	750	4	10,050	8
Skilled trade	5,950	20	2,100	5	4,100	13	450	3	12,600	10
Homemaker	950	3	200	*	850	5	850	5	2,850	3
Farmer	750	3	5,850	13	8,800	27	3,900	23	19,300	16
Logger	300	3	100	*	-	-	-	-	900	1
Unskilled laborer	3,800	13	7,700	17	1,250	4	1,350	8	14,100	11
No answer	1,450	5	3,100	7	2,300	10	1,450	26	8,300	10
Total	29,550	100	45,400	100	30,750	100	14,300	100	120,000	100
					ACRES OWNED					
Professional	172,900	18	196,750	11	174,700	12	25,800	6	570,150	12
Executive	79,600	9	262,350	14	117,750	8	31,500	8	491,200	10
Retired	227,500	24	346,650	19	269,700	18	85,950	20	929,800	20
White collar	63,700	7	159,250	9	113,950	8	22,900	5	359,800	8
Skilled trade	143,300	15	112,450	6	140,550	12	25,750	6	422,050	9
Homemaker	25,050	3	23,400	1	22,800	2	17,200	4	88,450	2
Farmer	77,350	8	430,950	23	463,400	31	157,550	38	1,129,250	24
Logger	22,750	2	9,650	*	-	-	-	-	32,100	1
Unskilled laborer	34,150	4	178,000	10	60,750	4	20,050	5	292,950	6
No answer	81,900	10	121,800	7	94,950	7	28,650	8	327,300	8
Total	928,200	100	1,840,950	100	1,458,550	100	415,350	100	4,643,050	100

* Less than 0.5 percent.

Table 13.--Occupation of individual owners whose forest land is part of an active farm.

Occupation	Owners		Acres owned	
	Number	Percent	Number	Percent
Professional	950	2	75,250	4
Owner/executive	1,050	3	92,150	4
Retired	7,150	19	273,400	14
White collar	1,950	5	112,400	6
Skilled trade	3,150	8	125,600	6
Homemaker	1,400	4	22,200	1
Farmer	19,300	50	1,129,250	56
Logger	150	*	9,250	*
Laborer	950	2	77,450	4
No answer	2,500	6	92,250	5
Total	38,550	100	2,009,200	100

* Less than 0.5 percent.

Table 14.--Estimated number of individual owners and acres of commercial forest land owned, by age class and forest survey unit, Minnesota, 1982

Age class (years)	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
0-24	50	*	500	1	500	2	100	1	1,150	1
25-44	9,250	31	17,500	39	8,350	27	3,000	21	38,100	32
45-64	11,400	39	16,500	36	13,800	45	5,700	40	47,400	40
65+	7,250	25	9,050	20	6,650	22	4,150	29	27,100	22
No answer	1,600	5	1,850	4	1,450	4	1,350	9	6,250	5
Total	29,550	100	45,400	100	30,750	100	14,300	100	120,000	100
					ACRES OWNED					
0-24	2,300	*	28,100	2	19,000	1	5,700	2	55,100	1
25-44	234,300	25	529,350	29	349,450	24	88,800	21	1,201,900	26
45-64	432,250	47	875,950	47	729,300	50	86,200	45	2,223,700	48
65+	209,300	23	351,350	19	296,250	20	108,850	26	965,750	21
No answer	50,050	5	56,200	3	64,550	5	125,800	6	196,600	4
Total	928,200	100	1,840,950	100	1,458,550	100	415,350	100	4,643,050	100

* Less than 0.5 percent.

Table 15.--Estimated number of individual owners and acres of commercial forest land owned, by years of formal education, Minnesota, 1982

Education	Individual owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
1-8 years	22,300	19	12	860,300	19	6
9-12 years	38,700	32	15	1,247,250	27	5
1-4 years of college	39,400	33	8	1,692,400	36	4
More than 4 years of college	12,500	10	17	623,700	13	7
No answer	7,100	6	41	219,400	5	11
Total	120,000	100	7	4,643,050	100	1

Table 16.--Estimated number of individual owners and acres of commercial forest land owned, by annual income class and forest survey unit, Minnesota, 1982

Annual income	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Under $10,000	4,400	15	9,800	22	7,750	25	2,050	14	24,000	20
$10-$14,999	1,650	5	6,650	15	3,350	11	1,900	13	13,550	11
$15-$19,999	4,250	14	6,800	15	2,950	9	1,450	10	15,450	13
$20-$24,999	5,900	20	5,850	13	2,750	9	1,450	10	15,950	13
$25-$29,999	2,050	7	3,800	8	2,400	8	350	3	8,600	7
$30-$39,999	1,050	4	2,050	5	3,050	10	2,050	14	8,200	7
$40,000+	2,400	8	4,300	9	5,150	17	2,850	20	14,700	12
No answer	7,850	27	6,150	13	3,350	11	2,200	16	19,550	17
Total	29,550	100	45,400	100	30,750	100	14,300	100	120,000	100
					ACRES OWNED					
Under $10,000	200,200	22	290,400	16	269,700	18	51,550	12	811,850	18
$10-$14,999	81,900	9	234,200	13	129,150	9	60,150	15	505,400	11
$15-$19,999	122,850	13	201,450	11	148,100	10	45,850	11	518,250	11
$20-$24,999	116,000	12	243,600	13	132,950	9	40,100	10	532,650	11
$25-$29,999	68,250	7	178,000	10	125,350	9	17,200	4	388,800	8
$30-$30,999	72,800	8	149,900	8	117,750	8	28,650	7	369,100	8
$40,000+	129,700	14	267,000	14	410,200	28	120,300	29	927,200	20
No answer	136,500	15	276,400	15	125,350	9	51,550	12	589,800	13
Total	928,200	100	1,840,950	100	1,458,550	100	415,350	100	4,643,050	100

Table 17.--Estimated number of individual owners and acres of commercial forest land owned, by early life environment and forest survey unit, Minnesota, 1982

Early life environment	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
City over 100,000	6,500	22	5,650	12	3,400	11	100	1	15,650	13
City 10,000-99,999	3,050	10	2,550	6	2,350	8	1,700	12	9,650	8
City less than 10,000	5,150	17	5,050	11	3,050	10	550	4	13,800	11
Rural area	3,750	13	10,100	22	3,050	10	2,250	16	19,150	15
Farm	9,050	31	18,100	40	17,150	56	8,200	57	52,500	44
No answer	2,050	7	3,950	9	1,750	5	1,500	10	9,250	8
Total	29,550	100	45,400	100	30,750	100	14,300	100	120,000	100
					ACRES OWNED					
City over 100,000	163,800	18	215,500	12	174,700	12	2,850	1	556,850	12
City 10,000-99,999	102,350	11	107,750	6	106,350	7	17,200	4	333,650	7
City less than 10,000	104,650	11	243,550	13	144,350	10	20,050	5	512,600	11
Rural area	138,800	15	290,400	16	117,800	8	34,350	8	581,350	13
Farm	350,350	38	861,950	47	839,400	58	312,250	75	2,363,950	51
No answer	68,250	7	121,800	6	75,950	5	28,650	7	294,650	6
Total	928,200	100	1,840,950	100	1,458,550	100	415,350	100	4,643,050	100

Table 18.--Estimated number of private ownership units and acres of commercial forest land owned, by primary and secondary reason for owning, Minnesota, 1982

Reason for owning	Primary reason			Secondary reason		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
			OWNERS			
Land investment	7,400	6	16	2,850	2	17
Nonmotorized recreation	16,400	12	11	14,350	11	13
Motorized recreation	200	*	49	4,350	3	20
Firewood sale	850	1	32	1,550	1	29
Product sales	750	1	30	1,200	1	21
Own use firewood	19,200	15	12	16,050	12	12
Own use products	1,650	1	23	6,850	5	15
Esthetic enjoyment	21,200	16	16	17,400	13	23
Part of farm	13,500	10	11	7,750	6	23
Part of my residence	31,050	24	19	10,250	8	29
Second home or cabin	4,750	4	26	6,150	5	24
Potential mineral value	650	*	32	900	1	31
Other	5,800	4	24	1,000	1	26
No answer	7,400	6	45	40,150	31	15
Total	130,800	100	6	130,800	100	6
			ACRES OWNED			
Land investment	508,200	10	8	225,600	5	12
Nonmotorized recreation	827,650	16	6	622,600	12	7
Motorized recreation	19,100	*	41	211,300	4	13
Firewood sale	63,900	1	23	106,750	2	18
Product sales	81,500	1	21	159,300	3	15
Own use firewood	772,300	15	6	761,800	15	6
Own use products	112,350	2	18	398,500	8	9
Esthetic enjoyment	612,550	12	7	496,450	10	8
Part of farm	724,850	14	6	278,400	6	11
Part of residence	720,450	14	6	265,250	5	11
Second home or cabin	186,800	4	13	213,700	4	13
Potential mineral value	38,350	1	28	54,100	1	23
Other	249,050	5	12	68,600	1	23
No answer	183,300	3	13	1,241,150	24	5
Total	5,100,350	100	.65	5,100,350	100	.65

* Less than 0.5 percent.

Table 19.--Estimated number of private ownership units and acres of commercial forest land owned, by primary reason for owning and harvest history, Minnesota, 1982

Primary reason for owning	Owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
			MAJOR HARVESTERS [1]			
Land investment	1,500	1	29	168,700	3	15
Nonmotorized recreation	5,150	4	19	266,250	5	11
Motorized recreation	50	*	65	9,250	*	58
Firewood sale	450	*	49	30,000	*	35
Product sales	500	*	31	64,650	1	25
Own use firewood	4,400	4	18	305,250	6	11
Own use products	1,450	1	26	90,850	2	21
Esthetic enjoyment	5,050	4	28	198,650	4	13
Part of farm	4,800	4	14	361,300	7	10
Part of residence	9,450	8	38	318,250	6	10
Second home or cabin	1,650	1	57	62,750	1	23
Potential mineral value	150	*	62	8,350	*	58
Other	2,550	2	44	109,700	2	18
No answer	1,150	1	36	61,500	1	23
Total	38,300	31	12	2,049,450	23	3
			NONHARVESTERS [2]			
Land investment	5,900	5	19	334,850	7	10
Nonmotorized recreation	11,250	9	13	561,400	11	8
Motorized recreation	150	*	62	9,850	*	58
Firewood sale	400	*	40	33,900	1	32
Product sales	250	*	64	16,850	*	45
Own use firewood	14,800	12	15	470,050	9	8
Own use products	150	*	51	17,700	*	45
Esthetic enjoyment	16,150	13	19	416,850	8	9
Part of farm	8,200	7	16	359,750	7	9
Part of residence	21,550	17	23	397,500	8	9
Second home or cabin	3,100	2	22	124,050	2	16
Potential mineral value	500	*	37	30,000	1	32
Other	3,100	2	27	133,300	3	16
No answer	1,400	1	38	53,500	1	26
Total	86,900	69	8	2,959,550	59	2
			ALL RESPONDING OWNERS [3]			
Land investment	7,400	6	16	503,550	10	8
Nonmotorized recreation	16,400	13	11	827,650	16	6
Motorized recreation	200	*	49	19,100	*	41
Firewood sale	850	*	32	63,900	1	23
Product sales	750	*	30	81,500	2	22
Own use firewood	19,200	16	12	772,300	15	6
Own use products	1,600	1	24	108,550	2	19
Esthetic enjoyment	21,200	17	16	612,500	12	7
Part of farm	13,000	11	11	721,050	14	7
Part of residence	31,000	25	19	715,750	14	5
Second home or cabin	4,750	3	26	186,800	4	13
Potential mineral value	650	*	32	38,350	1	28
Other	5,650	5	24	243,000	5	12
No answer	2,550	2	26	115,000	2	17
Total	125,200	100	6	5,009,000	100	1

* Less than 0.5 percent.

[1] Includes owners who harvested 30 cords or more of firewood or products other than firewood.

[2] Includes non harvesters and those who harvested less than 30 cords of firewood only.

[3] Excludes those who did not answer harvest question.

Table 20.--Estimated number of private ownership units and acres of commercial forest land owned, by primary reason for owning and forest survey unit, Minnesota, 1982

Primary reason for owning	Aspen-Birch			Northern Pine			Central Hardwood			Prairie			Total		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
							OWNERS								
Land investment	2,050	7	24	2,800	6	27	2,350	7	35	200	1	49	7,400	6	16
Nonmotor recreation	3,200	11	19	7,350	15	16	4,000	12	19	1,850	10	41	16,400	12	11
Motorized recreation	100	*	70	*	*	100	100	*	71	-	-	-	200	*	49
Firewood sale	50	*	59	300	1	58	400	1	55	100	1	59	850	1	32
Product sales	100	*	40	400	1	45	250	1	59	-	-	-	750	1	31
Own use firewood	1,700	6	25	3,800	8	18	9,200	26	20	4,500	24	28	19,200	15	13
Own use products	200	1	53	850	2	35	600	2	44	*	*	100	1,650	1	24
Esthetic enjoyment	3,200	11	24	12,450	26	28	2,600	7	25	2,950	16	39	21,200	16	16
Part of farm	1,150	4	23	2,700	6	25	6,250	18	17	3,400	18	26	13,500	10	11
Part of residence	14,300	47	30	11,250	24	22	3,850	11	29	1,650	9	33	31,050	24	19
Second home, cabin	2,200	7	39	1,450	3	37	1,000	3	43	100	1	79	4,750	4	26
Mineral value	350	1	39	250	*	64	50	*	100	-	-	-	650	*	32
Other	750	2	38	2,450	5	51	2,000	6	41	600	3	43	5,800	4	24
No answer	850	3	26	1,300	3	36	2,050	6	46	3,200	17	89	7,400	6	45
Total	30,200	100	15	47,350	100	10	34,700	100	9	18,550	100	19	130,800	100	6
							ACRES OWNED								
Land investment	116,000	12	14	215,500	11	15	159,500	10	15	17,200	4	41	508,200	10	8
Nonmotor recreation	159,250	16	12	379,450	19	11	231,650	14	13	57,300	12	22	827,650	16	6
Motorized recreation	6,850	*	58	4,650	*	100	7,600	1	71	-	-	-	19,100	*	41
Firewood sale	9,100	1	50	23,400	1	45	22,800	1	41	8,600	2	58	63,900	1	23
Product sales	25,000	2	35	37,500	2	35	19,000	1	45	-	-	-	81,500	2	22
Own use firewood	77,350	8	17	262,350	13	13	326,650	20	10	105,950	23	16	772,300	15	6
Own use products	18,200	2	41	60,900	3	28	30,400	2	35	2,850	1	100	112,350	2	19
Esthetic enjoyment	136,500	14	13	281,050	14	13	140,550	9	16	54,450	11	23	612,550	12	7
Part of farm	77,350	8	18	196,750	10	15	330,450	21	10	120,300	26	15	724,850	14	7
Part of residence	188,800	19	11	313,850	15	12	163,350	10	15	54,450	11	23	720,450	14	6
Second home, cabin	61,400	6	19	70,250	3	26	49,400	3	28	5,750	1	71	186,800	4	13
Mineral value	20,500	2	33	14,050	1	53	3,800	*	100	-	-	-	38,350	1	28
Other	43,250	4	23	98,350	5	22	75,950	5	22	31,500	7	30	249,050	5	12
No answer	56,850	6	21	65,600	3	27	49,400	3	28	11,450	2	50	183,300	4	13
Total	996,400	100	0.76	2,023,650	100	1.16	1,610,500	100	1.59	469,800	100	3.29	5,100,350	100	0.65

* Fewer than 25 owners or less than 0.5 percent.

Table 21.--Estimated number of private ownership units and acres of commercial forest land owned, by primary reason for owning and expected time of future harvest, Minnesota, 1982

Reason for owning	Expected time of future harvest									
	Next 10 years		Indefinite		Never		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Land investment	2,500	7	3,200	9	1,500	4	200	1	7,400	6
Nonmotorized recreation	4,750	12	6,950	19	4,200	10	500	3	200	*
Motorized recreation	100	*	*	*	100	*	*	*	200	*
Firewood sale	400	1	50	*	100	*	300	2	850	1
Product sales	450	1	300	1	-	-	*	*	750	1
Own use firewood	8,300	22	5,100	14	4,450	11	1,350	9	19,200	15
Own use products	850	2	400	1	100	*	300	2	1,650	1
Esthetic enjoyment	7,300	19	4,300	12	8,300	20	1,300	9	21,200	16
Part of farm	3,500	9	5,200	14	3,150	8	1,650	11	13,500	10
Part of residence	7,250	19	7,650	21	13,600	34	2,550	17	31,050	24
Second home/cabin	900	2	1,450	4	2050	5	350	2	4,750	4
Mineral value	50	*	550	1	*	*	50	*	650	*
Other	1,350	4	1,150	3	2,650	7	650	4	5,800	4
No answer	650	2	500	1	350	1	5,900	39	7,400	6
Total	38,350	100	36,800	100	40,550	100	15,100	100	130,800	100
					ACRES OWNED					
Land investment	187,500	9	202,700	12	105,750	12	12,250	3	508,200	10
Nonmotorized recreation	294,900	14	368,000	22	145,700	16	19,050	5	827,650	16
Motorized recreation	6,050	*	2,300	*	6,050	1	4,700	1	19,100	*
Firewood sale	38,150	2	11,200	1	3,800	*	10,750	3	63,900	1
Product sales	53,650	2	23,150	1	-	-	4,700	1	81,500	2
Own use firewood	435,100	20	171,500	10	110,150	12	55,550	15	772,300	15
Own use products	67,050	3	25,400	2	8,500	1	11,400	3	112,350	2
Esthetic enjoyment	231,200	11	202,300	12	157,300	18	21,750	6	612,550	12
Part of farm	325,200	15	241,550	15	104,250	12	53,850	14	724,850	14
Part of residence	346,400	16	215,650	13	121,000	13	37,400	10	720,450	14
Second home/cabin	61,950	3	63,350	4	44,650	5	16,850	4	186,800	4
Mineral value	4,550	*	26,800	2	2,300	*	4,700	1	38,350	1
Other	73,750	3	88,650	5	63,200	7	23,450	6	249,050	5
No answer	34,700	2	14,400	1	25,950	3	108,250	28	183,300	4
Total	2,160,150	100	1,656,950	100	898,600	100	384,650	100	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 22.--Estimated number of private ownership units and acres of commercial forest land owned, by primary benefit received in the last 5 years and harvest history, Minnesota, 1982

Primary benefit	Major harvesters		Minor harvesters		Did not harvest		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Land investment	3,350	9	2,600	7	7,550	15	100	2	13,600	10
Nonmotor recreation	4,500	12	4,400	12	6,300	13	-	-	15,200	12
Motorized recreation	650	2	400	1	200	*	-	-	1,250	1
Firewood sales	400	1	300	1	250	1	-	-	950	1
Product sales	1,200	3	100	*	-	-	-	-	1,300	1
Own use firewood	7,700	20	13,550	37	5,000	10	50	1	26,300	20
Own use products	1,950	5	100	*	100	*	100	2	2,250	2
Esthetic enjoyment	12,850	33	10,850	30	16,200	32	50	1	39,950	30
No important benefit	1,800	5	500	1	7,900	16	-	-	10,200	8
Other	2,550	7	3,600	10	4,700	9	50	1	10,900	8
No answer	1,350	3	450	1	1,850	4	5,250	93	8,900	7
Total	38,300	100	36,850	100	50,050	100	5,600	100	130,800	100
					ACRES OWNED					
Land investment	367,650	18	190,900	13	335,100	22	6,950	8	900,600	18
Nonmotor recreation	259,200	13	227,600	15	322,100	22	-	-	808,900	16
Motorized recreation	21,050	1	18,000	1	15,300	1	-	-	54,350	1
Firewood sales	38,450	2	25,450	2	8,500	1	-	-	72,400	1
Product sales	105,950	5	3,800	*	-	-	-	-	109,750	2
Own use firewood	452,050	22	569,600	39	91,800	6	3,800	4	1,117,250	22
Own use products	122,800	6	10,750	1	11,400	1	3,800	4	148,750	3
Esthetic enjoyment	410,250	20	317,750	22	414,600	28	4,700	5	1,146,700	22
No important benefit	89,950	4	21,050	1	163,050	11	-	-	274,050	5
Other	105,050	5	62,700	4	64,400	4	3,800	4	235,950	5
No answer	77,050	4	23,600	2	62,700	4	68,300	75	231,650	5
Total	2,049,450	100	1,470,600	100	1,488,950	100	91,350	100	5,100,350	100

* Less than 0.5 percent.

Table 23.--Estimated number of private ownership units and acres of commercial forest land owned, by primary benefits expected in the next 5 years and harvest history, Minnesota, 1982

Primary benefit	Major harvesters		Minor harvesters		Did not harvest		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Land investment	4,200	11	2,850	8	8,300	17	100	2	15,500	12
Nonmotor recreation	3,400	9	4,350	12	5,450	11	-	-	13,200	10
Motorized recreation	150	*	250	1	400	1	-	-	800	1
Firewood sale	650	2	100	*	200	*	-	-	950	1
Product sales	1,050	3	300	1	100	*	-	-	1,450	1
Own use firewood	8,500	22	13,550	37	6,750	13	50	1	28,850	22
Own use products	1,700	4	100	*	250	*	100	2	2,150	2
Esthetic enjoyment	11,350	30	11,200	30	14,400	29	500	9	37,450	29
No important benefits	3,050	8	1,300	4	6,850	14	-	-	11,200	8
Retirement/emergency income	750	2	1,650	4	800	2	-	-	3,200	2
Develop other use	700	2	100	*	200	*	-	-	1,000	1
Other	1,100	3	750	2	3,900	8	50	1	5,800	4
No answer	1,650	4	350	1	2,450	5	4,800	85	9,250	7
Total	38,300	100	36,850	100	50,050	11	5,600	100	130,800	100
					ACRES OWNED					
Land investment	357,300	17	187,800	13	375,900	25	6,950	8	927,950	18
Nonmotor recreation	218,450	11	217,250	15	280,350	19	-	-	716,050	14
Motorized recreation	20,150	1	16,950	1	17,500	1	-	-	54,650	1
Firewood sale	70,200	3	19,400	1	10,450	1	-	-	100,050	2
Product sale	100,150	5	29,250	2	12,100	1	-	-	141,500	3
Own use firewood	503,450	25	538,500	37	142,200	10	3,800	4	1,187,950	23
Own use products	100,800	5	12,750	1	15,150	1	3,800	4	130,500	3
Esthetic enjoyment	313,300	15	283,800	19	353,100	24	8,500	9	960,700	19
No important benefits	97,150	5	25,650	2	102,350	7	-	-	225,150	4
Retirement/emergency income	63,900	3	46,800	3	54,350	4	-	-	165,050	3
Develop other use	25,850	1	6,950	*	-	-	-	-	39,750	1
Other	96,000	5	58,750	4	50,650	3	3,800	4	209,200	4
No answer	80,750	4	28,750	2	67,850	4	64,500	71	241,850	5
Total	2,049,450	100	1,470,600	100	1,488,950	100	91,350	100	5,100,350	100

* Less than 0.5 percent.

Table 24.--Estimated number of private ownership units and acres of commercial forest land owned, by primary benefit expected in next 5 years and expected time of future harvest, Minnesota, 1982

Primary benefit	Expected time of future harvest: Next 10 years Number	Next 10 years Percent	Indefinite Number	Indefinite Percent	Never Number	Never Percent	No answer Number	No answer Percent	Total Number	Total Percent
					OWNERS					
Land investment	4,200	11	5,500	15	4,750	12	1,050	7	15,500	12
Nonmotor recreation	3,750	10	5,500	15	3,500	9	450	3	13,200	10
Motorized recreation	250	1	100	*	400	1	50	*	800	1
Firewood sale	550	1	350	1	-	-	50	*	950	1
Product sales	1,000	3	400	1	-	-	50	*	1,450	1
Own use firewood	12,000	31	8,050	22	6,850	17	1,950	13	28,850	22
Own use products	1,550	4	550	2	50	*	*	*	2,150	2
Esthetic enjoyment	10,650	28	11,150	30	13,800	34	1,850	12	37,450	29
No important benefits	1,700	4	1,550	4	7,100	18	850	6	11,200	8
Retirement/emergency income	600	2	1,000	3	500	1	1,100	7	3,200	2
Develop for other use	250	1	200	1	-	-	550	4	1,000	1
Other	1,300	3	500	1	3,400	8	600	4	5,800	4
No answer	550	1	1,950	5	200	*	6,550	44	9,250	7
Total	38,350	100	36,800	100	40,550	100	15,100	100	130,800	100
					ACRES OWNED					
Land investment	375,950	17	327,300	20	163,000	18	61,700	16	927,950	18
Nonmotor recreation	261,050	12	308,500	19	122,700	14	23,800	6	716,050	14
Motorized recreation	19,250	1	13,050	1	13,000	1	9,350	2	54,650	1
Firewood sale	77,500	4	19,700	1	-	-	2,850	1	100,050	2
Product sales	119,400	5	17,400	1	-	-	4,700	1	141,500	3
Own use firewood	648,800	30	292,750	18	178,600	20	67,800	18	1,187,950	23
Own use products	86,150	4	36,750	2	3,800	*	3,800	1	130,500	3
Esthetic enjoyment	317,800	15	372,800	22	243,150	27	26,950	7	960,700	19
No important benefits	40,750	2	95,300	6	79,200	9	9,900	3	225,150	4
Retirement/emergency income	62,150	3	65,950	4	23,800	3	13,150	3	165,050	3
Develop for other use	24,300	1	6,950	*	-	-	8,500	2	39,750	1
Other	89,650	4	48,400	3	52,400	6	18,750	5	209,200	4
No answer	37,400	2	52,100	3	18,950	2	133,400	35	241,850	5
Total	2,160,150	100	1,656,950	100	898,600	100	384,650	100	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 25.--Estimated number of private ownership units and acres of commercial forest land owned, by form of ownership and harvest history, Minnesota, 1982

Form of ownership	Harvest history: Major harvesters Number	Major harvesters Percent	Minor harvesters Number	Minor harvesters Percent	Did not harvest Number	Did not harvest Percent	No answer Number	No answer Percent	Total Number	Total Percent
					OWNERS					
Individual	36,400	28	35,350	27	47,400	36	850	1	120,000	92
Part/corp	950	1	550	*	1,800	1	50	*	3,350	3
Club/ass'n	100	*	*	*	250	*	-	-	350	*
Trust	-	-	*	*	50	*	-	-	50	*
Estate	500	*	950	1	300	*	-	-	1,750	1
No answer	350	*	-	-	250	*	4,700	3	5,300	4
Total	38,300	29	36,850	28	50,050	38	5,600	4	130,800	100
					ACRES OWNED					
Individual	1,878,250	37	1,367,950	27	1,351,450	26	45,400	1	4,643,050	91
Part/corp	109,850	2	68,250	1	86,150	2	4,700	*	268,950	5
Club/ass'n	14,050	*	14,050	*	6,950	*	-	-	35,050	1
Trust	-	-	3,800	*	11,400	*	-	-	15,200	*
Estate	39,700	1	16,550	*	22,550	*	-	-	78,800	2
No answer	7,600	*	-	-	10,450	*	41,250	1	59,300	1
Total	2,049,450	40	1,470,600	29	1,488,950	29	91,350	2	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 26.--Estimated number of major harvests and acres of commercial forest land owned, by reason for harvesting and form of ownership, Minnesota, 1982

Reason for harvesting	Form of ownership							
	Individual		Partnership/ Corporation		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				MAJOR HARVESTERS				
For own use	10,750	29	100	11	150	16	11,000	29
Mature timber	4,150	11	150	16	50	5	4,350	11
Thinning, improvement	2,850	8	50	5	50	5	2,950	8
Salvage	6,800	19	250	26	350	37	7,400	19
Good price	950	3	*	*	*	*	950	2
Land clearing	2,500	7	200	21	*	*	2,700	7
Needed money	2,350	6	-	-	350	37	2,700	7
Wildlife habitat	400	1	-	-	-	-	400	1
Other	300	1	-	-	-	-	300	1
No answer	5,350	15	200	21	*	*	5,550	15
Total	36,400	100	950	100	950	100	38,300	100
				ACRES OWNED				
For own use	615,100	33	19,650	18	24,800	40	659,550	32
Mature timber	389,800	21	19,250	18	6,950	11	416,000	20
Thinning, improvement	136,400	7	13,150	12	4,700	8	154,250	8
Salvage	223,850	12	15,150	14	3,800	6	242,800	12
Good price	56,700	3	4,700	4	2,300	4	63,700	3
Land clearing	151,550	8	24,800	22	2,850	5	179,200	9
Needed money	172,250	9	-	-	12,150	20	184,400	9
Wildlife habitat	38,450	2	-	-	-	-	38,450	2
Other	25,550	1	-	-	-	-	25,550	1
No answer	68,600	4	13,150	12	3,800	6	85,550	4
Total	1,878,250	100	109,850	100	61,350	100	2,049,450	100

* Fewer than 25 owners or less than 0.5 percent.

Table 27.--Estimated number of private owners and acres of commercial forest land owned, by farm and nonfarm and harvest history, Minnesota, 1982

Harvest history	Private owners				Acres owned			
	Farm		Nonfarm		Farm		Nonfarm	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Major harvest	15,050	38	23,250	25	1,059,400	51	990,050	3
Minor harvest	13,600	34	23,250	25	663,350	32	807,250	27
No harvest	10,450	27	39,600	43	340,450	16	1,114,550	37
No answer	300	1	5,300	6	16,050	1	75,300	3
Total	39,400	100	91,400	100	2,079,200	100	3,021,150	100

Table 28.--Estimated number of minor harvesters and acres of commercial forest land owned, by reason for harvesting, Minnesota, 1982

Reason for harvesting	Number of owners		Acres owned	
	Number	Percent	Number	Percent
For own use	23,250	63	1,033,900	70
Mature timber	300	1	15,100	1
Thinning, improvement	1,550	4	38,300	3
Salvage	8,550	23	257,950	17
Good price	50	*	10,750	1
Land clearing	1,750	5	77,950	5
Needed money	50	*	3,800	*
Wildlife habitat	1,300	3	26,050	2
Other	*	*	2,250	*
No answer	50	*	4,550	*
Total	36,850	100	1,470,600	100

* Fewer than 25 owners or less than 0.5 percent.

Table 29.--Estimated number of private ownership units and acres of commercial forest land owned, by reason for not harvesting, Minnesota, 1982

Reason for not harvesting	Number of owners		Acres owned	
	Number	Percent	Number	Percent
	NONHARVESTERS			
Timber immature	5,650	11	121,000	8
No market	700	2	50,650	3
Low price	700	2	37,450	3
Poor quality	3,150	6	86,150	6
Low volume	5,900	12	60,650	4
Small area	4,200	8	36,350	3
Selling land	1,750	4	80,850	5
Land in estate	100	*	9,100	1
Destroy hunting	5,200	10	190,350	13
Ruin scenery	8,300	17	243,850	16
Distrust loggers	500	1	19,100	1
Opposed to logging	150	*	9,850	1
Create fire hazard	-	-	-	-
Saving for retirement	3,150	6	125,000	8
Legacy for heirs	1,150	2	65,300	4
Need more information	2,750	6	132,450	9
Other	3,700	7	137,850	9
No answer	3,000	6	83,000	6
Total	50,050	10	1,488,950	100

* Less than 0.5 percent.

Table 30.--Estimated number of individual owners and acres of commercial forest land owned, by occupation and expected time of future harvest, Minnesota, 1982

Occupation	Expected time of future harvest									
	1 - 10 years		Indefinite		Never		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Professional	5,050	39	4,250	32	3,450	26	400	3	13,150	100
Executive	4,150	39	3,850	36	2,000	19	650	6	10,650	100
Retired	6,750	24	8,550	30	11,300	40	1,550	6	28,150	100
White collar	2,950	30	3,950	40	2,450	24	650	6	10,000	100
Skilled trade	2,700	21	4,400	35	5,000	39	650	5	12,750	100
Homemaker	800	22	350	10	950	26	1,550	42	3,650	100
Farmer	9,350	48	4,700	24	3,150	16	2,350	12	19,550	100
Logger	300	31	100	11	-	-	550	58	950	100
Unskilled laborer	3,600	26	2,400	17	7,950	56	200	1	14,150	100
No answer	1,750	14	1,850	15	2,600	21	6,100	50	12,300	100
Total	37,400	30	34,400	27	38,850	31	14,650	12	125,300	100
					ACRES OWNED					
Professional	263,850	46	203,850	36	76,900	13	25,550	5	570,150	100
Executive	229,650	46	175,700	36	76,050	15	13,600	3	495,000	100
Retired	328,500	35	277,600	30	255,400	27	72,050	8	933,550	100
White collar	149,800	42	132,050	36	64,050	18	13,950	4	359,850	100
Skilled trade	168,000	40	185,150	43	55,250	13	17,450	4	425,850	100
Homemaker	21,500	23	31,800	34	29,950	33	8,950	10	92,200	100
Farmer	596,550	52	312,500	28	137,100	12	89,800	8	1,135,950	100
Logger	20,660	64	9,250	29	-	-	2,250	7	32,100	100
Unskilled labor	147,050	50	83,750	28	51,100	17	13,900	5	295,800	100
No answer	114,150	32	95,050	26	54,700	15	98,000	27	361,900	100
Total	2,039,650	43	1,506,700	32	800,500	17	355,500	8	4,702,350	100

Table 31.--Estimated number of private ownership units and acres of commercial forest land owned, by size class and expected time of future harvest, Minnesota, 1982

Size class (acres)	Expected time of future harvest									
	1 - 10 Years		Indefinite		Never		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
1 - 49 acres	24,750	25	26,150	26	35,400	36	13,100	13	99,400	100
50 - 99 acres	7,200	39	6,750	36	3,550	19	1,100	6	18,600	100
100 - 499 accres	6,300	50	3,850	31	1,550	12	850	7	12,550	100
500 + acres	100	40	50	20	50	20	50	20	250	100
Total	38,350	29	36,800	28	40,550	31	15,100	12	130,800	100
					ACRES OWNED					
1 - 49 acres	445,350	30	507,150	34	387,350	26	154,250	10	1,494,100	100
50 - 99 acres	510,750	39	466,850	36	248,300	19	73,250	6	1,299,150	100
100 - 499 acres	1,088,850	53	602,700	29	229,500	11	130,350	7	2,051,400	100
500 + acres	115,200	45	80,250	31	33,450	13	26,800	11	255,700	100
Total	2,160,150	42	1,656,950	32	898,600	18	384,650	8	5,100,350	100

Table 32.--Estimated number of major harvesters and acres of commercial forest land owned, by method of selecting timber and individual selecting timber, Minnesota, 1982

Method of selecting timber	Individual selecting timber							All major harvesters	
	Landowner	Forester	Friend or neighbor	Buyer	Landowner and forester	Landowner and buyer	No answer	Total Number	Percent
				MAJOR HARVESTERS					
Selection	5,500	1,350	50	350	150	550	-	7,950	21
Diameter limit	2,000	150	-	450	50	250	-	2,900	8
Clearcutting	2,000	50	-	100	*	200	-	2,350	6
Land clearing	1,350	-	-	-	50	50	-	1,450	4
Dead or dying	700	-	-	50	-	*	350	1,100	3
Windblown	150	-	-	-	-	-	-	150	*
Other	100	50	50	200	50	-	-	450	1
Don't know	250	-	-	200	-	-	-	450	1
No answer	12,250	350	250	1,050	50	450	7,100	21,500	56
Total	24,300	1,950	350	2,400	350	1,500	7,450	38,300	100
				ACRES OWNED					
Selection	251,750	65,350	3,750	19,400	20,650	37,450	-	398,350	20
Diameter limit	217,100	12,150	-	42,550	6,050	32,600	-	310,450	15
Clearcutting	122,250	9,850	-	14,400	6,950	15,200	-	168,650	8
Land clearing	56,250	-	-	-	3,800	3,800	-	63,850	3
Dead or dying	49,550	-	-	3,800	-	2,300	3,800	59,450	3
Windblown	2,300	-	-	-	-	-	-	2,300	*
Other	9,100	3,800	2,300	25,050	2,850	-	-	43,100	2
Don't know	12,750	-	-	15,200	-	-	-	27,950	1
No answer	625,050	42,050	18,750	63,750	14,050	41,250	170,450	975,350	48
Total	1,346,100	133,200	24,800	184,150	54,350	132,600	174,250	2,049,450	100

* Fewer than 25 owners or less than 0.5 percent.

Table 33.--Estimated number of major harvesters and acres of commercial forest land owned, by timber products harvested and size class of ownership, Minnesota, 1982 1/

Timber product	Size class of ownership									
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					MAJOR HARVESTERS					
Sawlogs	5,950	23	3,500	52	2,700	45	50	33	12,200	32
Veneer logs	1,050	4	500	7	350	6	*	*	1,900	5
Pulpwood	5,200	20	1,950	29	1,650	28	50	33	8,850	23
Posts, poles, pilings	3,050	12	650	10	700	12	*	*	4,400	11
Tie bolts	550	2	150	2	350	6	-	-	1,050	3
Christmas trees	1,250	5	200	3	300	5	50	33	1,800	5
Firewood	7,800	31	3,100	46	2,800	47	50	33	13,750	36
Other	600	2	-	-	150	2	*	*	750	2
Don't know	-	-	100	1	50	1	-	-	150	*
No answer	11,200	44	1,100	16	1,500	25	50	33	13,850	36
Total	25,500		6,700		5,950		150		38,300	
					ACRES OWNED					
Sawlogs	162,200	38	247,000	52	462,700	46	47,850	32	919,750	45
Veneer logs	36,000	8	32,150	7	75,100	7	3,800	2	147,050	7
Pulpwood	84,250	20	137,900	29	290,500	29	51,450	35	564,100	28
Posts, poles, pilings	64,350	15	42,000	9	122,050	12	11,350	8	239,750	12
Tie bolts	16,050	4	11,400	2	63,300	6	3,800	2	94,550	5
Christmas trees	16,800	4	15,300	3	47,400	5	22,550	15	102,050	5
Firewood	154,500	36	222,900	47	489,700	49	41,350	28	908,450	44
Other	9,850	2	3,800	1	26,500	3	3,800	2	43,950	2
Don't know	-	-	7,600	2	6,050	1	-	-	13,650	1
No answer	128,100	30	79,100	17	234,100	23	57,200	39	498,500	24
Total	423,000		474,550		1,004,150		147,750		2,049,450	

* Fewer than 25 owners or less than 0.5 percent.

1/ Items do not add to total because some owners may have harvested more than one product.

Table 34.--Estimated number of private owners interested in an improvement cut and acres of commercial land owned, by distance from nearest tract, size class of ownership, and forest survey unit, Minnesota, 1982

Distance to tract (miles)	Size class of ownership									
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres		All owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
					ASPEN-BIRCH UNIT					
0 - 24	4,600	57	800	49	800	52	50	100	6,250	55
25 - 49	250	3	100	6	50	3	-	-	400	4
50+	2,950	37	600	36	600	39	*	*	4,150	37
No answer	200	3	150	9	100	6	-	-	450	4
Total	8,000	100	1,650	100	1,550	100	50	100	11,250	100
					NORTHERN PINE UNIT					
0 - 24	8,150	56	2,400	59	2,400	75	100	67	13,050	59
25 - 49	1,350	9	100	2	50	1	-	-	1,500	7
50+	4,050	28	1,450	36	600	19	50	33	6,150	28
No answer	1,100	7	100	3	150	5	*	*	1,350	6
Total	14,650	100	4,050	100	3,200	100	150	100	22,050	100
					CENTRAL HARDWOOD UNIT					
0 - 24	8,050	73	2,500	67	2,100	71	*	*	12,650	71
25 - 49	200	2	200	5	100	3	*	*	500	3
50+	2,250	20	950	25	700	24	50	100	3,950	22
No answer	600	5	100	3	50	2	-	-	750	4
Total	11,100	100	3,750	100	2,950	100	50	100	17,850	100
					PRAIRIE UNIT					
0 - 24	3,500	75	1,000	95	700	88	*	*	5,200	80
25 - 49	1,000	21	-	-	*	*	-	-	1,000	15
50+	200	4	50	5	100	12	-	-	350	5
No answer	-	-	-	-	-	-	-	-	-	-
Total	4,700	100	1,050	100	800	100	*	*	6,550	100
					ALL UNITS					
0 - 24	24,300	63	6,700	64	6,000	70	150	60	37,150	64
25 - 49	2,800	7	400	4	200	2	*	*	3,400	6
50+	9,450	25	3,050	29	2,000	24	100	40	14,600	25
No answer	1,900	5	350	3	300	4	*	*	2,550	5
Total	38,450	100	10,500	100	8,500	100	250	100	57,700	100

(Table 34 continued on next page)

Table 34.--continued.

Distance to tract (miles)	Size class of ownership									
	1 - 49 acres		50 - 99 acres		100-499 acres		500+ acres		All owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ACRES OWNED					
					ASPEN-BIRCH UNIT					
0 - 24	63,700	49	54,600	47	134,200	51	22,750	59	275,250	50
25 - 49	6,800	5	9,100	8	13,650	5	-	-	29,550	5
50+	52,300	41	43,200	37	102,400	39	15,950	41	213,850	39
No answer	6,850	5	9,100	8	13,650	5	-	-	29,600	6
Total	129,650	100	116,000	100	263,900	100	38,700	100	548,250	100
					NORTHERN PINE UNIT					
0 - 24	135,850	52	163,950	58	426,300	74	70,250	65	796,350	65
25 - 49	28,100	11	9,350	3	9,400	2	-	-	46,850	4
50+	79,650	30	103,050	37	112,450	19	32,750	31	327,900	27
No answer	18,750	7	4,700	2	28,050	5	4,700	4	56,200	4
Total	262,350	100	281,050	100	576,200	100	107,700	100	1,227,300	100
					CENTRAL HARDWOOD UNIT					
0 - 24	163,300	72	174,750	66	338.050	69	15,200	31	691,300	67
25 - 49	7,600	3	15,200	6	22,800	5	7,600	15	53,200	5
50+	45,600	20	68,350	26	117,750	24	26,600	54	258,300	25
No answer	11,350	5	7,600	2	11,400	2	-	-	30,350	3
Total	227,850	100	265,900	100	490,000	100	49,400	100	1,033,150	100
					PRAIRIE UNIT					
0 - 24	68,750	83	71,600	93	103,150	86	11,450	100	254,950	87
25 - 49	8,600	10	-	-	2,850	2	-	-	11,450	4
50+	5,750	7	5,750	7	14,300	12	-	-	25,800	9
No answer	-	-	-	-	-	-	-	-	-	-
Total	83,100	100	77,350	100	120,300	100	11,450	100	292,200	100
					ALL UNITS					
0 - 24	431,600	62	464,900	63	1,001,700	69	119,650	58	2,017,850	65
25 - 49	51,100	7	33,650	4	48,700	3	7,600	4	141,050	4
50+	183,300	26	220,350	30	346,900	24	75,300	36	825,850	27
No answer	36,950	5	21,400	3	53,100	4	4,700	2	116,150	4
Total	702,950	100	740,300	100	1,450,400	100	207,250	100	3,100,900	100

* Fewer than 25 owners or less than 0.5 percent.

Table 35.--Estimated number of private owners who never plan to harvest timber and acres of commercial forest land owned, by interest in an improvement cut and distance from residence to nearest tract, Minnesota, 1982

Interested in improvement cut	Distance from residence (miles)									
	0 - 24		25 - 49		50+		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Yes	4,000	14	1,100	85	4,250	55	1,600	54	10,950	27
No	24,100	84	200	15	3,100	40	900	31	28,300	70
No answer	500	2	-	-	350	5	450	15	1,300	3
Total	28,600	100	1,300	100	7,700	100	2,950	100	40,550	100
					ACRES OWNED					
Yes	206,150	36	30,700	70	117,900	56	30,750	42	385,500	43
No	325,300	57	13,050	30	79,000	37	25,750	35	443,100	49
No answer	38,650	7	-	-	14,500	7	16,850	23	70,000	8
Total	570,100	100	43,750	100	211,400	100	73,350	100	898,600	100

Table 36A.--Estimated number of individual owners who are interested in an improvement cut, by owner characteristics and forest survey unit, Minnesota, 1982

Owner characteristic	Survey unit: Aspen-Birch		Northern Pine		Central Hardwood		Prairie		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
AGE (years)										
> 24	50	1	400	2	400	2	50	1	900	2
25 - 44	4,850	44	8,350	40	4,400	26	2,150	35	19,750	36
45 - 64	4,000	36	8,450	40	7,200	43	2,500	41	22,150	40
65 +	2,000	18	2,500	12	4,250	26	1,400	23	10,150	19
No answer	100	1	1,250	6	500	3	50	*	1,900	3
Total	11,000	100	20,950	100	16,750	100	6,150	100	54,850	100
					OWNERS					
EDUCATION										
1 - 8 years	750	7	1,750	9	3,650	22	1,600	26	7,750	14
9 - 12 years	1,750	16	5,300	25	3,600	22	1,200	20	11,850	22
1 - 4 yrs of college	5,200	47	9,600	46	6,600	39	2,850	46	24,250	44
More than 4 yrs of college	3,050	28	4,250	20	2,350	14	450	7	10,100	18
No answer	250	2	50	*	550	3	50	1	900	2
Total	11,000	100	20,950	100	16,750	100	6,150	100	54,850	100
					OWNERS					
OCCUPATION										
Professional	3,300	30	4,650	22	2,500	15	500	8	10,950	20
Executive	800	7	3,450	17	1,500	9	350	6	6,100	11
Retired	2,000	18	4,150	20	4,150	25	1,650	27	11,950	22
White collar	2,250	21	1,600	8	1,500	9	550	9	5,900	11
Skilled labor	1,650	15	900	4	1,800	11	200	3	4,550	8
Homemaker	100	1	100	*	700	4	100	2	1,000	2
Farmer	350	3	2,750	13	3,400	20	2,200	36	8,700	16
Logger	100	1	100	*	-	-	-	-	200	*
Unskilled labor	50	*	2,650	13	350	2	450	7	3,500	6
No answer	400	4	600	3	850	5	150	2	2,000	4
Total	11,000	100	20,950	100	16,750	100	6,150	100	54,850	100
					OWNERS					
INCOME										
Under $10,000	1,400	13	2,300	11	4,150	25	250	4	8,100	15
$10-14,999	800	7	3,900	19	1,350	8	450	7	6,500	12
$15-19,999	1,900	17	3,500	17	1,550	9	750	12	7,700	14
$20-24,999	1,800	16	2,700	13	1,450	9	1,400	23	7,350	13
$25-29,999	1,600	15	2,200	10	1,300	8	100	2	5,200	9
$30-39,999	550	5	1,500	7	1,950	11	200	3	4,200	8
$40,000 +	1,900	17	2,800	13	3,500	21	2,250	37	10,450	19
No answer	1,050	10	2,050	10	1,500	9	750	12	5,350	10
Total	11,000	100	20,950	100	16,750	100	6,150	100	54,850	100

* Less than 0.5 percent.

Table 36B.--Estimated number acres owned by individual owners who are interested in an improvement cut, by owner characteristics and forest survey unit, Minnesota, 1982

Owner characteristic	Survey unit: Aspen-Birch		Northern Pine		Central Hardwood		Prairie		All units	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ACRES OWNED					
AGE (years)										
> 24	2,300	*	18,750	2	15,200	2	2,850	1	39,100	1
25 - 44	152,400	30	323,200	29	262,100	28	74,500	29	812,200	29
45 - 64	247,950	49	618,350	55	471,000	50	120,300	47	1,457,600	51
65 +	102,350	20	126,500	11	163,350	17	51,550	20	443,750	16
No answer	6,850	1	28,100	3	34,150	3	5,750	3	74,850	3
Total	511,850	100	1,114,900	100	945,800	100	254,950	100	2,827,500	100
					ACRES OWNED					
EDUCATION										
1 - 8 years	63,700	12	126,500	11	132,950	14	60,150	24	383,300	13
9 - 12 years	118,300	23	276,350	25	235,500	25	65,900	26	696,050	25
1 - 4 yrs of college	209,300	41	501,250	45	379,850	40	94,500	37	1,184,900	42
More than 4 yrs of college	106,900	21	196,750	18	170,950	18	28,650	11	503,250	18
No answer	13,650	3	14,050	1	26,550	3	5,750	2	60,000	2
Total	511,850	100	1,114,900	100	945,800	100	254,950	100	2,827,500	100
					ACRES OWNED					
OCCUPATION										
Professional	122,850	24	163,950	15	159,550	17	22,900	9	469,250	17
Executive	61,450	12	178,000	16	98,750	10	22,900	9	361,100	13
Retired	106,900	21	192,050	17	144,350	15	43,000	17	486,300	17
White collar	38,650	8	84,350	8	94,950	10	20,050	8	238,000	8
Skilled labor	77,350	15	74,950	7	94,950	10	11,450	4	258,700	9
Homemaker	6,800	1	14,050	1	15,200	2	5,750	2	41,800	1
Farmer	56,900	11	267,000	24	262,100	28	108,850	43	694,850	25
Logger	9,100	2	4,700	*	-	-	-	-	13,800	*
Unskilled labor	4,550	1	89,000	8	26,600	3	11,450	5	131,600	5
No answer	27,300	5	46,850	4	49,350	5	8,600	3	132,100	5
Total	511,850	100	1,114,900	100	945,800	100	254,900	100	2,827,500	100
					ACRES OWNED					
INCOME										
Under $10,000	88,750	17	131,150	12	132,950	14	20,050	8	372,900	13
$10-14,999	45,500	9	145,200	13	68,400	7	31,500	12	290,600	10
$15-19,999	72,800	14	121,800	11	83,350	9	31,500	12	309,650	11
$20-24,999	63,700	13	159,250	14	79,750	8	37,250	15	339,950	12
$25-29,999	47,750	9	107,750	10	79,750	9	5,750	2	241,000	8
$30-39,999	47,800	10	112,450	10	98,750	11	14,300	6	272,300	10
$40,000 +	97,800	19	196,750	18	334,250	35	94,550	37	723,350	26
No answer	47,750	9	140,550	12	68,400	7	20,050	8	276,750	10
Total	511,850	100	1,114,900	100	945,800	100	254,950	100	2,827,500	100

* Less than 0.5 percent.

Table 37.--Estimated number of private owners and acres of commercial forest land owned, by request for forestry assistance and forest survey unit, Minnesota, 1982

Forestry assistance requested	Forest survey unit									
	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Yes	5,050	17	5,550	12	4,250	12	1,400	7	16,250	12
No	23,500	18	39,700	84	27,750	80	13,150	71	104,100	80
No answer	1,650	5	2,100	4	2,700	8	4,000	22	10,450	8
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					ACRES OWNED					
Yes	211,550	21	454,400	23	345,650	21	37,250	8	1,048,850	21
No	716,600	72	1,461,500	72	1,185,100	74	403,900	86	3,767,100	74
No answer	68,250	7	107,750	5	79,750	5	28,650	6	284,400	5
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100

Table 38.--Estimated number of private owners and acres of commercial forest land owned, by owners who have requested forestry assistance and size class of ownership, Minnesota, 1982

Size class (acres)	All private owners		Owners that requested assistance		
	Number	Percent	Number	Percent	Percent of size class
			OWNERS		
1 - 49	99,400	76	10,150	63	10
50 - 99	18,600	14	3,000	18	16
100 - 499	12,550	10	2,950	18	24
500 +	250	*	150	1	60
Total	130,800	100	16,250	100	12
			ACRES OWNED		
1 - 49	1,494,100	29	173,850	17	12
50 - 99	1,299,150	26	220,600	21	17
100 - 499	2,051,400	40	539,700	51	26
500 +	255,700	5	114,700	11	45
Total	5,100,350	100	1,048,850	100	21

* Less than 0.5 percent.

Table 39.--Estimated number of assisted owners and acres of commercial forest land owned, by size class of ownership and distance from residence to nearest tract, Minnesota, 1982

Size class (acres)	Miles to nearest tract									
	0 - 24		25 - 49		50 +		No answer		All assisted owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
1 - 49	7,850	48	700	4	1,550	10	50	*	10,150	63
50 - 99	2,050	13	150	1	700	4	100	1	3,000	18
100 - 499	1,950	12	150	1	800	5	50	*	2,950	18
500 +	100	1	*	*	50	*	-	-	150	1
Total	11,950	74	1,000	6	3,100	19	200	1	16,250	100
					ACRES OWNED					
1 - 49	127,650	12	8,900	1	35,000	3	2,300	*	173,850	17
50 - 99	148,200	14	12,150	1	54,200	5	6,050	1	220,600	21
100 - 499	340,000	32	25,200	2	153,000	15	21,500	2	539,700	51
500 +	60,250	6	6,100	1	48,350	5	-	-	114,700	11
Total	676,100	64	52,350	5	290,550	28	29,850	3	1,048,850	100

* Less than 0.5 percent.

Table 40.--Estimated number of private owners who requested forestry assistance and acres of commercial forest land owned, by type of assistance and size class of ownership, Minnesota, 1982

Nature of assistance	Size class of ownership								All owners who requested assist.	
	1 - 49 acres		50 - 99 acres		100 - 499 acres		500 + acres			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
TSI[1/]	650	6	350	12	300	10	*	*	1,300	8
Planting	300	3	400	13	300	10	*	*	1,000	6
Sales and valuation[2/]	2,400	24	700	23	800	27	50	33	3,950	24
General management[3/]	4,700	46	1,150	39	1,000	34	50	33	6,900	43
No answer	2,100	21	400	13	550	19	50	33	3,100	18
Total	10,150	100	3,000	100	2,950	100	150	100	16,250	100
					ACRES OWNED					
TSI[1/]	18,950	11	28,800	13	52,250	10	6,100	5	106,100	10
Planting	6,650	4	25,450	12	56,000	10	9,350	8	97,450	9
Sales and valuation[2/]	55,400	32	49,050	22	135,450	25	26,350	23	266,250	26
General management[3/]	60,600	35	85,900	39	183,450	34	46,700	41	376,650	36
No answer	32,250	18	31,400	14	112,550	21	26,200	23	202,400	19
Total	173,850	100	220,600	100	539,700	100	114,700	100	1,048,850	100

* Fewer than 25 owners or less than 0.5 percent.

[1/] Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

[2/] Includes timber marking, sales assistance, and determination of merchantability.

[3/] Includes management planning, surveying, and insect and disease control.

Table 41.--Estimated number of private owners requesting forestry assistance and acres of commercial forest land owned, by type of assistance and distance from residence to nearest tract, Minnesota, 1982

Type of assistance	Miles to nearest tract								All owners who requested assist.	
	<25 miles		25 - 49 miles		50 + miles		No answer			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					ASSISTED OWNERS					
TSI[1/]	550	5	*	*	750	24	-	-	1,300	8
Planting	950	8	*	*	50	2	*	*	1,000	6
Sales and valuation[2/]	2,800	23	800	80	250	8	100	50	3,950	24
General management[3/]	5,300	44	100	10	1,450	47	50	25	6,900	43
No answer	2,350	20	100	10	600	19	50	25	3,100	19
Total	11,950	100	1,000	100	3,100	100	200	100	16,250	100
					ACRES OWNED					
TSI[1/]	49,250	7	2,300	4	54,550	19	-	-	106,100	10
Planting	74,050	11	4,700	9	14,050	5	4,650	16	97,450	9
Sales and valuation[2/]	191,250	28	18,050	35	47,700	16	9,250	31	266,250	26
General management[3/]	246,450	37	9,850	19	112,750	39	7,600	25	376,650	36
No answer	115,100	17	17,450	33	61,500	21	8,350	28	202,400	19
Total	676,100	100	52,350	100	290,550	100	29,850	100	1,048,850	100

* Fewer than 25 owners or less than 0.5 percent.

1/ Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

2/ Includes timber marking, sales assistance, and determination of merchantability.

3/ Includes management planning, surveying, and insect and disease control.

Table 42.--Estimated number of assisted ownership units and acres of commercial forest land owned, by harvest history, Minnesota, 1982

Harvest history	Owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
Major and minor harvesters	13,350	82	26	839,550	80	6
Nonharvesters	2,850	18	21	200,800	19	13
No answer	50	*	83	8,500	1	71
Total	16,250	100	22	1,048,850	100	5

Table 43.--Estimated proportion of assisted individual owners and acres of commercial forest land owned, by age class and nature of assistance, Minnesota, 1982

Nature of assistance	Age group (years)				
	< 25	25-44	45-64	65+	No answer
	Percent	Percent	Percent	Percent	Percent
	PERCENT OF ASSISTED OWNERS				
TSI[1]	-	2 (4)[2]	6 (17)	1 (3)	* (6)
Planting	-	2 (4)	2 (4)	2 (12)	- -
Sales and valuation[3]	-	11 (23)	9 (26)	3 (26)	2 (75)
General management[4]	-	26 (57)	13 (37)	3 (18)	* (19)
Other	-	1 (2)	1 (2)	* (2)	- -
No answer	-	4 (10)	5 (14)	7 (45)	- -
Total	0	46(100)	36(100)	16(100)	2(100)
Distribution of all owners in population[5]	0:1	19:32	12:40	9:22	4:5
	PERCENT OF ACRES OWNED				
TSI[2]	-	4 (12)	6 (11)	1 (6)	* (9)
Planting	-	3 (10)	4 (7)	1 (8)	- -
Sales and valuation[3]	-	7 (21)	12 (24)	4 (28)	2 (75)
General management[4]	-	12 (40)	20 (38)	6 (38)	* (16)
Other	-	2 (7)	2 (4)	1 (6)	- -
No answer	-	3 (10)	8 (16)	2 (14)	- -
Total	0	31(100)	52(100)	15(100)	2(100)
Distribution of total acres[5]	0:1	23:26	22:48	14:21	12:4

* Less than 0.5 percent.

1/ Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

2/ The first listed number shows the percent of all assisted owners or all assisted acres represented by that cell. The second listed number (in parentheses) shows the distribution within each age group.

3/ Includes timber marking, sales assistance, and determination of merchantability.

4/ Includes management planning, surveying, and insect and disease control.

5/ The first number shows the percent of all owners (or acres owned) in that age group who requested assistance, the second number shows the percent of the entire population represented by all owners in that age group.

Table 44.--Estimated proportion of assisted individual owners and acres of commercial forest land owned, by occupation group and nature of assistance, Minnesota, 1982

Nature of assistance	Occupation group																			
	Professional		Executive		Retired		White collar		Skilled trade		Homemaker		Farmer		Logger		Unskilled labor		No answer	
	Percent		Percent		Percent		Percent		Percent		Percent		Percent		Percent		Percent		Percent	
										ASSISTED OWNERS										
TSI[1]	4	(24)[2]	*	(4)	*	(3)	-	-	1	(2)	*	(6)	2	(14)	-	-	*	(4)	*	(3)
Planting	*	(2)	1	(10)	2	(18)	*	(10)	*	(2)	-	-	2	(10)	-	-	*	(4)	-	-
Sales and valuation[3]	4	(21)	3	(41)	2	(18)	2	(29)	3	(10)	*	(7)	8	(43)	*	(65)	3	(71)	1	(14)
General management[4]	6	(35)	3	(34)	3	(34)	3	(44)	20	(73)	3	(79)	5	(28)	-	-	*	(7)	1	(11)
Other	1	(4)	*	(6)	*	(6)	*	(1)	-	-	*	(8)	*	(*)	*	(35)	-	-	*	(1)
No answer	2	(14)	*	(5)	2	(21)	1	(13)	3	(13)	-	-	1	(5)	-	-	1	(14)	7	(71)
Total	17	(100)	7	(100)	9	(100)	6	(100)	27	(100)	3	(100)	18	(100)	*	(100)	4	(100)	9	(100)
Distribution of all owners in population[5]	19:11		11:8		5:22		9:8		33:10		17:3		14:16		2:1		4:11		17:10	
										ACRES OWNED										
TSI[1]	4	(18)	1	(8)	1	(3)	-	-	*	(6)	1	(24)	3	(15)	-	-	*	(11)	*	(8)
Planting	1	(4)	2	(16)	1	(5)	1	(12)	1	(7)	-	-	2	(10)	-	-	1	(14)	-	-
Sales and valuation[3]	6	(26)	3	(20)	3	(19)	2	(21)	4	(34)	*	(20)	4	(22)	*	(50)	1	(40)	2	(39)
General management[4]	7	(31)	5	(40)	7	(50)	5	(58)	4	(36)	*	(20)	7	(37)	-	-	1	(21)	1	(27)
Other	2	(6)	*	(4)	1	(8)	*	(3)	-	-	1	(36)	1	(2)	*	(50)	-	-	*	(5)
No answer	3	(15)	1	(12)	2	(15)	*	(6)	2	(17)	-	-	3	(14)	-	-	1	(14)	1	(21)
Total	23	(100)	12	(100)	15	(100)	8	(100)	11	(100)	2	(100)	20	(100)	*	(100)	4	(100)	5	(100)
Distribution of total acres in population[5]	37:12		23:10		14:20		20:8		24:9		16:24		14:1		11:6		14:8			

* Less than 0.5 percent.

[1] Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

[2] The first listed number shows the percent of all assisted owners or all assisted acres represented by that cell. The second listed number (in parentheses) shows the percent distribution only within that occupatation group.

[3] Includes timber marking, sales assistance, and determination of merchantability.

[4] Includes management planning, surveying, and insect and disease control.

[5] The first number shows the percent of all owners (or acres owned) in that occupation group who requested assistance, the second number shows the percent of the entire population represented by all owners in that occupation group.

Table 45.--Estimated proportion of assisted owners and acres of commercial forest land owned, by education group and nature of assistance, Minnesota, 1982

Nature of assistance	Education level				
	1 - 8 years	9 - 12 years	1 - 4 years of college	More than 4 years of college	No answer
	Percent	Percent	Percent	Percent	Percent
ASSISTED OWNERS					
TSI[1]	* (1)[2]	2 (6)	5 (10)	2 (9)	- -
Planting	1 (9)	1 (4)	2 (5)	2 (10)	- -
Sales & value[3]	2 (42)	6 (22)	10 (23)	4 (24)	1 (40)
Gen mgt[4]	2 (28)	16 (57)	16 (36)	7 (39)	1 (60)
Other	- -	1 (2)	1 (2)	1 (4)	- -
No answer	1 (20)	3 (9)	10 (24)	3 (14)	- -
Total	6 (100)	29 (100)	44 (100)	19 (100)	2 (100)
Distribution of all owners in population[5]	4:19	11:32	17:33	24:10	5:6
ACRES OWNED					
TSI[1]	* (3)	2 (13)	4 (9)	4 (15)	- -
Planting	1 (12)	2 (10)	3 (8)	2 (7)	- -
Sales & value[3]	3 (29)	4 (25)	10 (23)	8 (25)	1 (45)
Gen mgt[4]	3 (30)	4 (24)	20 (45)	10 (36)	1 (55)
Other	- -	2 (12)	1 (3)	2 (6)	- -
No answer	2 (26)	3 (16)	5 (12)	3 (11)	- -
Total	9 (100)	17 (100)	43 (100)	29 (100)	2 (100)
Distribution of all acres in population[5]	9:19	13:27	23:36	43:13	9:5

* Less than 0.5 percent.

1/ Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

2/ The first listed number shows the percent of all assisted owners or all assisted acres represented by that cell. The second listed number (in parentheses) shows the percent distribution only within that education group.

3/ Includes timber marking, sales assistance, and determination of merchantability.

4/ Includes management planning, surveying, and insect and disease control.

5/ The first number shows the percent of all owners (or acres owned) in that education group who requested assistance, the second number shows the percent of the entire population represented by all owners in that education group.

Table 46.--Estimated proportion of assisted owners and acres of commercial forest land owned, by income group and nature of assistance, Minnesota, 1982

Nature of assistance	Income group (thousand dollars)							
	> $10	$10-15	$15-20	$20-25	$25-30	$30-40	$40 +	No answer
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
ASSISTED OWNERS								
TSI[1]	* (3)[2]	1 (22)	1 (9)	* (2)	1 (3)	* (10)	3 (14)	2 (10)
Planting	- -	* (4)	* (4)	* (1)	* (10)	1 (16)	1 (8)	2 (8)
Sales & value[3]	2 (15)	1 (21)	4 (41)	3 (12)	3 (40)	1 (17)	6 (35)	6 (23)
Gen mgt[4]	6 (60)	3 (52)	2 (16)	18 (81)	2 (33)	1 (34)	6 (32)	5 (22)
Other	* (5)	* (1)	* (1)	1 (3)	- -	* (3)	1 (4)	* *
No answer	2 (17)	- -	3 (29)	* (1)	1 (14)	1 (20)	1 (7)	9 (37)
Total	10(100)	5(100)	10(100)	22(100)	7(100)	4(100)	18(100)	24(100)
Distribution of all owners in population[5]	6:20	6:11	10:13	21:13	12:7	7:7	19:12	19:17
ACRES OWNED								
TSI[1]	1 (6)	2 (25)	2 (14)	1 (8)	* (3)	1 (13)	4 (12)	1 (7)
Planting	- -	1 (8)	1 (5)	1 (6)	1 (10)	2 (24)	2 (8)	1 (10)
Sales & value[3]	4 (28)	1 (19)	3 (31)	3 (25)	4 (39)	1 (21)	6 (19)	3 (26)
Gen mgt[4]	5 (42)	3 (44)	3 (34)	7 (50)	3 (34)	2 (24)	10 (35)	5 (37)
Other	1 (8)	* (4)	* (3)	1 (7)	- -	* (3)	2 (7)	* (4)
No answer	2 (16)	- -	1 (13)	* (4)	1 (4)	1 (15)	5 (19)	2 (16)
Total	13(100)	7(100)	10(100)	13(100)	9(100)	7(100)	29(100)	12(100)
Distribution of all acres in population[5]	14:18	12:11	17:11	23:11	22:8	18:8	29:20	19:13

* Less than 0.5 percent.

1/ Includes thinning, improvement cuts, pruning, herbicide applications and other timber stand improvements.

2/ The first listed number shows the percent of all assisted owners or all assisted acres represented by that cell. The second listed number (in parentheses) shows the percent distribution only within that income group.

3/ Includes timber marking, sales assistance, and determination of merchantability.

4/ Includes management planning, surveying, and insect and disease control.

5/ The first number shows the percent of all owners (or acres owned) in that income group who requested assistance, the second number shows the percent of the entire population represented by all owners in that income group.

Table 47.--Estimated number of private ownership units and acres of commercial forest land owned, by agency that owners would contact for forestry assistance, and size class of ownership, Minnesota, 1982

Agency	Size class of ownership									
	1 - 49 acres		50 - 99 acres		100 - 499 acres		500 + acres		All owners	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
County forester	2,350	2	400	2	350	3	*	*	3,100	2
State forester	14,250	14	3,900	21	3,200	26	150	60	21,500	17
Soil Cons. Service	1,450	2	150	1	100	1	-	-	1,700	1
U.S. Forest Service	2,950	3	300	2	300	2	*	*	3,550	3
Agric. Stabilization Cons. Service	3,600	4	200	1	150	1	-	-	3,950	3
Consultant/industry Forester	350	*	150	1	50	*	*	*	550	*
Extension Service	1,500	2	100	1	250	2	*	*	1,850	1
Other	1,050	1	400	2	500	4	*	*	1,950	2
Don't know	43,800	44	10,100	54	5,350	43	50	20	59,300	45
No answer	28,100	28	2,900	15	2,300	18	50	20	33,350	26
Total	99,400	100	18,600	100	12,550	100	250	100	130,800	100
					ACRES OWNED					
County forester	29,850	2	29,850	2	60,000	3	10,750	4	130,450	2
State forester	293,650	20	274,850	21	556,000	27	106,150	42	1,230,650	24
Soil Cons. Service	19,050	1	8,500	1	27,450	1	-	-	55,000	1
U.S. Forest Service	21,400	1	19,700	2	49,350	2	3,800	1	94,250	2
Agric. Stabilization Cons. Service	15,900	1	14,550	1	29,250	2	-	-	59,700	1
Consultant/industry forester	10,800	1	9,850	1	6,950	*	9,350	4	39,950	1
Extension Service	28,600	2	7,550	1	41,150	2	9,350	4	86,650	2
Other	29,650	2	30,900	2	74,000	4	6,050	2	140,600	3
Don't know	675,200	45	701,600	54	840,150	41	63,300	25	2,280,250	45
No answer	370,000	25	201,800	15	367,100	18	46,950	18	985,850	19
Total	1,494,100	100	1,299,150	100	2,051,400	100	255,700	100	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 48.--Estimated number of private ownership units and acres of commercial forest land owned, by agency that owners would contact for forestry assistance, and by decision to seek assistance, Minnesota, 1982

Agency	Sought assistance		No assistance		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				OWNERS				
County forester	550	3	2,550	3	-	-	3,100	2
State forester	7,750	48	13,650	13	100	1	21,500	17
SCS	200	1	1,500	1	-	-	1,700	1
USFS	3,050	19	500	1	-	-	3,500	3
ASCS	250	2	3,700	4	*	*	3,950	3
Consultant/industry forester	100	1	450	*	-	-	550	*
Extension service	350	2	1,500	1	-	-	1,850	1
Other	150	1	1,800	2	-	-	1,950	2
Don't know	2,350	14	56,500	54	450	4	59,300	45
No answer	1,500	9	21,950	21	9,900	95	33,350	26
Total	16,250	100	104,100	100	10,450	100	130,800	100
				ACRES OWNED				
County forester	58,200	5	72,250	2	-	-	130,450	2
State forester	663,650	63	562,350	15	4,650	2	1,230,650	24
SCS	20,750	2	34,250	1	-	-	55,000	1
USFS	42,600	4	51,650	1	-	-	94,250	2
ASCS	29,100	3	28,300	1	2,300	1	59,700	1
Consultant/industry forester	9,250	1	27,700	1	-	-	36,950	1
Extension service	31,300	3	55,350	1	-	-	86,650	2
Other	19,100	2	121,500	3	-	-	140,600	3
Don't know	114,350	11	2,133,550	57	32,350	11	2,280,250	45
No answer	60,550	6	680,200	18	245,100	86	985,850	19
Total	1,048,850	100	3,767,100	100	284,400	100	5,100,350	100

* Fewer than 25 owners or less than 0.5 percent.

Table 49.--Estimated number of private ownership units and acres of commercial forest land owned, by availability for recreation, Minnesota, 1982

Recreation availability	Owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
Owner does not recreate but permits public use	12,000	9	33	296,400	6	11
Owner recreates and permits public use	30,000	23	14	1,555,600	31	4
Owner recreates and excludes others	47,250	36	8	1,904,350	37	3
Owner recreates and no public use shown	25,550	20	16	936,050	18	6
Subtotal recreation	114,800	88	7	4,692,400	92	1
Not used/not permitted	6,250	5	28	109,250	2	18
No answer	9,750	7	33	298,700	6	11
Total	130,800	100	6	5,100,350	100	0.65

Table 50.--Estimated number of private ownership units and acres of commercial forest land owned, by type of recreational use by the owner, the owner's family, or immediate circle of friends, Minnesota, 1982

Recreation by owner, family or friends	Owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling Error(%)
Hiking or skiing	51,850	40	8	2,256,100	44	3
Picnicking	27,500	21	12	1,196,900	23	5
Camping	24,700	19	13	1,110,150	22	5
Fishing	20,700	16	11	957,600	19	6
Hunting or trapping	63,600	49	6	3,273,350	64	2
Snowmobiling/trail-biking	32,700	25	9	1,649,650	32	4
Berry picking	46,700	36	9	2,073,600	41	3
Other	12,200	9	32	401,000	8	9
Any recreation by self [1/]	102,800	79	7	4,396,00	86	1
No uses indicated	28,000	21	19	704,350	14	7
Total	130,800	100	6	5,100,350	100	0.65

[1/] Columns do not add to total because some owners report more than one type of use.

Table 51.--Estimated number of private ownership units and acres of commercial forest land owned, by type of public use permitted, Minnesota, 1982

Type of public use	Owners			Acres owned		
	Number	Percent	Sampling error(%)	Number	Percent	Sampling error(%)
Hiking or skiing	11,400	9	17	779,150	15	6
Picnicking	3,500	3	19	308,850	6	11
Camping	3,500	3	19	303,400	6	11
Fishing	5,400	4	27	316,650	6	10
Hunting or trapping	19,050	14	10	1,156,350	23	7
Snowmobiling/trail-biking	8,350	6	10	687,650	13	7
Berry picking	7,750	6	24	489,300	10	8
Other	4,250	3	71	79,600	2	21
All types [1/]	42,000	32	14	1,852,000	36	4
Public use not permitted	53,500	41	8	2,013,600	40	3
No uses indicated	35,300	27	15	1,234,750	24	5
Total	130,800	100	6	5,100,350	100	0.65

[1/] Columns do not add to total because some owners report more than one type of use.

Table 52.--Estimated number of private ownership units and acres of commercial forest land owned, by availability for recreational use and forest survey unit, Minnesota, 1982

Recreational use	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Public use:										
Hiking	2,650	9	4,000	8	2,850	8	1,900	10	11,400	9
Hunting	2,750	9	7,850	16	5,950	17	2,500	13	19,050	14
Snowmobiling	1,450	5	3,450	7	2,350	7	1,100	6	8,350	6
All types[1/]	9,900	33	16,350	34	9,100	26	6,650	36	42,000	32
Public not permitted	9,400	31	20,700	44	16,500	48	6,900	37	53,500	41
No answer	10,900	36	10,300	22	9,100	26	5,000	27	35,300	27
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					OWNERS					
Owner recreation:										
Hiking	9,550	32	21,300	45	15,450	44	5,550	30	51,850	40
Hunting	10,350	34	26,250	55	19,100	55	7,900	42	63,600	49
Snowmobiling	8,450	28	11,950	25	9,600	28	2,700	14	32,700	25
All types[1/]	22,300	74	36,800	78	29,800	86	13,900	75	102,800	79
Not used by owner	4,200	14	7,300	15	3,500	10	3,250	17	18,250	14
No answer	3,700	12	3,250	7	1,400	4	1,400	8	9,750	7
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					ACRES OWNED					
Public use:										
Hiking	129,650	13	313,850	16	258,300	16	77,350	16	779,150	15
Hunting	204,750	20	459,050	23	372,250	23	120,300	26	1,156,350	23
Snowmobiling	109,200	11	299,800	15	201,300	12	77,350	16	687,650	13
All types[1/]	359,450	36	777,600	38	554,550	35	160,400	34	1,852,000	36
Public not permitted	429,950	43	782,300	39	649,500	40	151,850	32	2,013,600	40
No answer	207,000	21	463,750	23	406,450	25	157,550	34	1,234,750	24
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100
					ACRES OWNED					
Owner recreation:										
Hiking	414,050	42	913,450	45	771,050	48	157,550	34	2,256,100	44
Hunting	550,550	55	1,358,500	67	1,063,500	66	300,800	64	3,273,350	64
Snowmobiling	343,500	34	655,800	32	501,400	31	148,950	32	1,649,650	32
All types[1/]	855,400	86	1,728,550	85	1,416,750	88	395,300	84	4,396,000	86
Not used by owner	70,500	7	163,950	8	125,350	8	45,850	10	405,650	8
No answer	70,500	7	131,150	7	68,400	4	28,650	6	298,700	6
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100

[1/] Columns do not add to total because some owners permit more than one type of use.

Table 53.--Estimated number of private ownership units and acres of commercial forest land owned, by availability for recreational use and size class, Minnesota, 1982

Public use permitted	Size class of ownership									
	1 - 49 acres		50 - 99 acres		100 - 499 acres		500+ acres		All ownerships	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Yes	30,600	31	6,400	34	4,850	39	150	60	42,000	32
No	41,100	41	7,600	41	4,750	38	50	20	53,500	41
No answer	27,700	28	4,600	25	2,950	23	50	20	35,300	27
Total	99,400	100	18,600	100	12,550	100	250	100	130,800	100
					ACRES OWNED					
Yes	441,700	30	449,100	34	822,900	40	138,300	54	1,852,000	36
No	658,450	44	529,900	41	757,650	37	67,600	26	2,013,600	40
No answer	393,950	26	320,150	25	470,850	23	49,800	20	1,234,750	24
Total	1,149,100	100	1,299,150	100	2,051,400	100	255,700	100	5,100,350	100

Table 54.--Estimated number of private ownership units and acres of commercial forest land owned, by whether land is posted and forest survey unit, Minnesota, 1982

	Aspen-Birch		Northern Pine		Central Hardwood		Prairie		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
					OWNERS					
Land posted	5,600	19	16,450	35	14,250	41	4,450	24	40,750	31
Land not posted	22,800	75	27,850	59	17,650	51	10,000	54	78,300	60
No answer	1,800	6	3,050	6	2,800	8	4,100	22	11,750	9
Total	30,200	100	47,350	100	34,700	100	18,550	100	130,800	100
					ACRES OWNED					
Land posted	341,250	34	875,950	43	797,650	50	183,350	39	2,198,200	43
Land not posted	577,800	58	979,050	49	729,300	45	263,550	56	2,549,700	50
No answer	77,350	8	168,850	8	83,550	5	22,900	5	352,450	7
Total	996,400	100	2,023,650	100	1,610,500	100	469,800	100	5,100,350	100

Table 55.--Estimated number of private ownership units and acres of commercial forest land owned, by reason for posting and public use permitted, Minnesota, 1982

Reason for posting	Public permitted		Public not permitted		No answer		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
				OWNERS				
Abuse of property	650	2 (11)[1/]	3,750	7 (16)	1,600	5 (15)	6,000	5 (15)
Safety	700	2 (12)	550	1 (2)	200	1 (2)	1,450	1 (3)
Control hunting	2,200	5 (37)	7,100	13 (29)	4,050	11 (38)	13,350	10 (33)
Privacy	150	* (2)	1,200	2 (5)	300	1 (3)	1,650	1 (4)
Protect livestock	50	* (1)	1,450	3 (6)	100	* (1)	1,600	1 (4)
Control access	1,100	3 (18)	6,400	12 (26)	3,000	8 (29)	10,500	8 (26)
Liability	50	* (1)	250	* (1)	-	-	300	* (1)
No reason given	1,050	2 (18)	3,600	7 (15)	1,250	4 (12)	5,900	5 (14)
All reasons	5,950	14(100)	24,300	45(100)	10,500	30(100)	40,750	31(100)
Land not posted	28,950	69	27,000	51	22,350	63	78,300	60
No answer	7,100	17	2,200	4	2,450	7	11,750	9
Total	42,000	100	53,500	100	35,300	100	130,800	100
				ACRES OWNED				
Abuse of property	7,500	4 (1)	257,800	13 (12)	69,000	6 (16)	401,800	8 (18)
Safety	43,150	2 (8)	50,350	3 (4)	18,250	1 (4)	111,750	2 (5)
Control hunting	202,200	11 (37)	330,850	16 (27)	155,050	13 (35)	688,100	13 (31)
Privacy	11,200	1 (2)	84,800	4 (7)	24,800	2 (6)	120,800	2 (6)
Protect livestock	20,700	1 (4)	55,800	3 (5)	15,100	1 (3)	91,600	2 (4)
Control access	118,450	6 (22)	307,300	15 (25)	99,000	8 (23)	524,750	10 (24)
Liability	6,950	* (1)	17,500	* (2)	-	-	24,450	* (1)
No reason given	64,450	4 (12)	113,150	6 (9)	57,300	5 (13)	234,900	5 (11)
All reasons	542,100	29(100)	1,217,550	60(100)	438,500	36(100)	2,198,150	43(100)
Land not posted	1,129,700	61	721,250	36	698,750	56	2,549,700	50
No answer	180,200	10	74,800	4	97,500	8	352,500	7
Total	1,852,000	100	2,013,600	100	1,234,750	100	5,100,350	100

* Less than 0.5 percent.

[1/] Percent of those who post their land.

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Carpenter, Eugene M.; Hansen, Mark H.; St. John, Dennis M.
The private forest landowners of Minnesota—1982. Resour. Bull. NC-95. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1986. 55 p.

Presents the results of a mail canvass of nonindustrial private forest landowners in Minnesota to relate owner attitudes and intentions concerning ownership, management, harvest and recreational use of their forest property. Provides 55 tables contrasting owner characteristics, management actions, and attitudes for the state and its four survey units.

KEY WORDS: Nonindustrial owners, forestry assistance, recreation, owner attitudes, harvesting, farm forestry, NIPFL.

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North Central Forest Experiment Station

Resource Bulletin **NC-96**

Nebraska's Second Forest Inventory

Gerhard K. Raile

CLEMSON UNIVERSITY
JUN 22 1987

Information contained in this report includes the most commonly used Forest Inventory and Analysis (FIA) statistics. However, additional forest resource data can be provided to interested users. Persons requesting additional information that can be provided from the raw inventory data are expected to pay for the retrieval costs. These costs will vary, depending on the complexity of the request, from less than $100 for a simple request to $2,000 for a complete retrieval involving the services of a FIA computer programmer. If requests for data conflict with ongoing work, they will be scheduled so as to minimize the impact on the work unit.

Address requests for unpublished information to:

Burton L. Essex
Forest Inventory and Analysis Project
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108
Phone: (612) 642-5275

Area served: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern South Dakota, Wisconsin.

North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
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1986

FOREWORD

Forest Inventory and Analysis (FIA) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974. Prior inventories were mandated by the McSweeney-McNary Forest Research Act of 1928. The objective of FIA is to periodically inventory the Nation's forest land to determine its extent, condition, and volume of timber, growth, and depletions. Up-to-date resource information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Inventory and Analysis work in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Fieldwork for the 1983 Nebraska forest survey began in April 1982 and was completed in March 1983. The previous survey of Nebraska's timber resource was dated 1955. The Nebraska Forest Service canvassed primary wood-using mills and provided the fuelwood and post statistics.

Aerial photos used in this Inventory were furnished by USDA Agricultural Stabilization and Conservation Service offices in each county.

HIGHLIGHTS

AREA

- Forest land area totaled 718,300 acres—1.5 percent of the State's total land area.
- Twenty-three percent of the State's forest land is unproductive.
- Commercial forest land decreased by 25 percent between 1955 and 1983, from 714,700 to 537,800 acres.
- Farmers own 71 percent of the State's commercial forest land.
- Forty percent of the commercial forest land is in sawtimber stands of ponderosa pine (129,700 acres) and elm-ash-cottonwood (85,800 acres).
- Sawtimber stands account for 69 percent of the commercial forest followed by poletimber stands (17 percent), sapling and seedling stands (13 percent), and nonstocked areas (1 percent).
- Stands between 60 and 101 years of age occupy 48 percent of the commercial forest.
- Thirty-nine percent of the commercial forest is poorly stocked with growing-stock trees (16.7 to 60 percent), 49 percent is medium stocked (61 to 100 percent), and 10 percent is well stocked (101 to 133 percent).
- Wooded strips occupy 262,200 acres. Wooded strips are not classified as commercial forest because they are too narrow to meet the definition.

VOLUME

- The total volume of timber on commercial forest land in 1983 was 561.6 million cubic feet—456.0 million in growing-stock trees, 96.3 million in cull trees, and 9.3 million in salvable dead trees.
- Growing-stock volume increased 23 percent from 370.2 million cubic feet in 1955 to 456.0 million cubic feet in 1983.
- Growing-stock volume per acre increased 64 percent from 518 cubic feet in 1955 to 848 cubic feet in 1983.
- Elm growing stock drastically dropped due to Dutch elm disease—from 51.3 million cubic feet in 1955 to 12.4 million cubic feet in 1983.
- Ponderosa pine is the species with the most sawtimber volume on commercial forest land (46 percent of the total), followed by cottonwood (30 percent) and bur oak (7 percent).
- Farmers own 72 percent of the growing-stock volume (327.4 million cubic feet).
- The ponderosa pine type accounts for 34 percent of the growing-stock volume, the cottonwood type for 23 percent, and the elm-ash-cottonwood type for 19 percent.
- The ponderosa pine type has the most sawtimber volume per acre with 5,216 board feet.

STAND CONDITIONS

- Net annual growth of growing stock amounted to 11.1 million cubic feet in 1982, 2.4 percent of inventory.
- Sawtimber growth was 42.7 million board feet in 1982, 2.5 percent of inventory.
- Mortality of growing-stock trees totaled 2.2 million cubic feet in 1982, 0.5 percent of inventory.
- Weather accounts for 17 percent of the sawtimber mortality.
- Sawtimber volume by butt log grade is concentrated in log grade 3 (65 percent of sawtimber volume).

TIMBER USE

- Timber removals from growing stock totaled 9.4 million cubic feet in 1982-8.4 million for roundwood products, 440,000 for logging residue, and 513,000 for other removals.
- Removals of growing stock for 1982 are 147 percent higher than those in 1953.
- Farmers and miscellaneous private individuals owned 99 percent of the 1982 growing-stock removals.
- Sawtimber removals from commercial forest land totaled 36.3 million board feet in 1982, 102 percent higher than in 1953.
- Growing-stock removals for roundwood products totaled 8.4 million cubic feet, 62 percent as firewood, 35 percent as saw logs, and 3 percent other products.
- Wood residue from primary plants amounted to 1.6 million cubic feet in 1980—69 percent of it was used for domestic fuel and products such as livestock bedding, mulch, etc.

BIOMASS

- Live tree biomass (trees greater than 1 inch in d.b.h.) totaled 29.0 million green tons or 54 tons per acre of commercial forest land.
- Highest yields per acre of live tree biomass are in the cottonwood (72 tons) and the oak-hickory types (67 tons).
- Sixty-five percent of the live tree biomass is in the boles of trees greater than 5-inches d.b.h., 27 percent is in the tops and limbs of these trees, and 8 percent is in trees less than 5-inches d.b.h.

PROJECTIONS

- The low removals option projection shows inventory increasing from 456 to 608 million cubic feet between 1983 and 2013, a 33-percent gain. Growth is projected to exceed removals throughout the period.
- The high removals option projection shows inventory rising from 456 to 527 million cubic feet in 2012 and then declining. Removals are projected to surpass growth by 2012.

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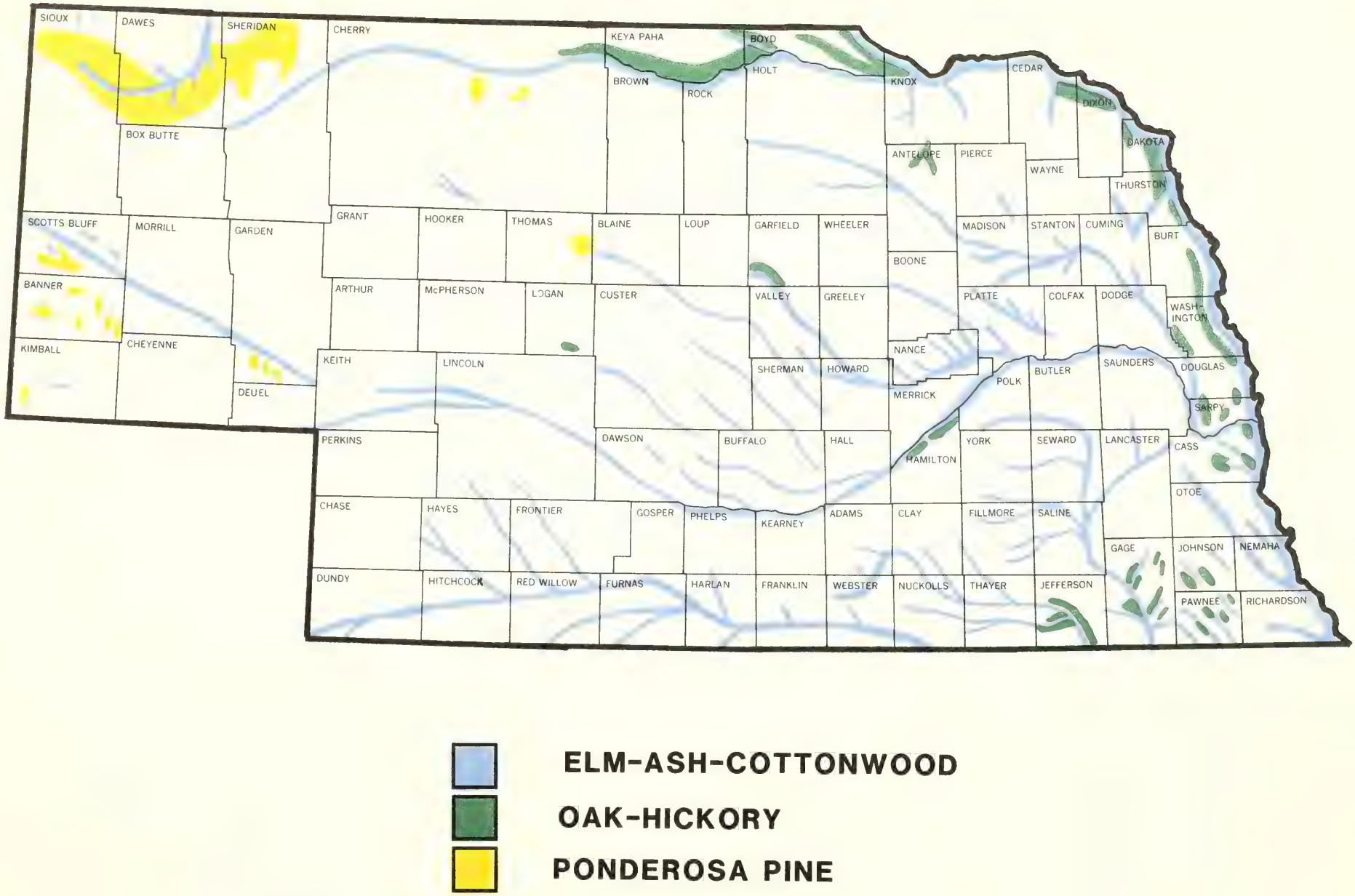

Figure 1.—*Major Forest Areas in Nebraska, 1983.*

NEBRASKA'S SECOND FOREST INVENTORY

Gerhard K. Raile, *Mensurationist*

Forest land in Nebraska, with hardwoods plentiful in the east and softwoods dominant in the west, totaled 718,300 acres in 1983. This is a decrease of 185,000 acres from the 1955 (Stone and Bagley, 1961) forest area. Forests are only 1.5 percent of Nebraska's total land area, but they return important economic and noncommodity benefits to the State. Forest land includes commercial forest, unproductive forest, and productive-reserved forest land (See Definition of Terms in Appendix).

One of the greatest impacts on the State's forest land between the 1955 and 1983 forest inventories was the extremely high mortality of elm from Dutch elm disease—particularly in the larger diameter trees. In 1955, elm had the third largest volume after cottonwood and ponderosa pine, but by 1983 it had dropped to fifth place.

FOREST AREA

Between Inventories Commercial Forest Land Loses 25 Percent

Commercial forest area decreased from 714,700 to 537,800 acres between 1955[1] and 1983. The major reason for this decline was the shift of commercial forest land to agriculture. In addition, some forest was flooded by reservoirs. Forty-four percent of the 1983 commercial area is pastured. Except for the Pine Ridge area of northwest Nebraska, this grazing is an obstacle to establishing and regenerating high quality stands.

Commercial forest land is divided almost equally between the Eastern (278,900 acres) and the Western Units (258,900) (fig. 1). Dawes County (48,064 acres), Sioux County (35,987 acres), and Sheridan County (31,453 acres), all in the Western Unit, lead all other counties in commercial forest area. In terms of commercial forest as a percent of total land area, Dawes County leads all others with 5.4 percent, while Sarpy and Thurston Counties in the Eastern Unit are tied for second (4.4 percent).

Private Owners Hold Largest Area of Forest Land

Forty-five percent of the nonindustrial private forest land is owned by parties with from 10 to 50 acres of commercial forest. Another 30 percent is owned by parties with from 50 to 500 acres, as shown in the following tabulation.

Size of holding (Acres)	Area owned by nonindustrial private parties (Thousand acres)
1-5	45.0
5-10	41.8
10-20	113.6
20-50	99.3
50-100	70.5
100-500	70.4
500-2,500	28.6
2,500-5,000	3.4
5,000+	--
Total	472.6

These areas represent the total area owned by an individual and may include one or more noncontiguous tracts.

Nonindustrial private parties own 88 percent of the commercial forest (fig. 2). Farmers alone own 71 percent of the State's commercial area, and miscellaneous private parties own another 17 percent.

Ponderosa Pine Type Makes Up 27 Percent of Commercial Area

The ponderosa pine forest type, generally found in the northwestern corner of the State, leads all others

[1]*Figures have been adjusted from those published after the 1955 survey to conform to 1983 statistics because of changes in survey definitions and procedures.*

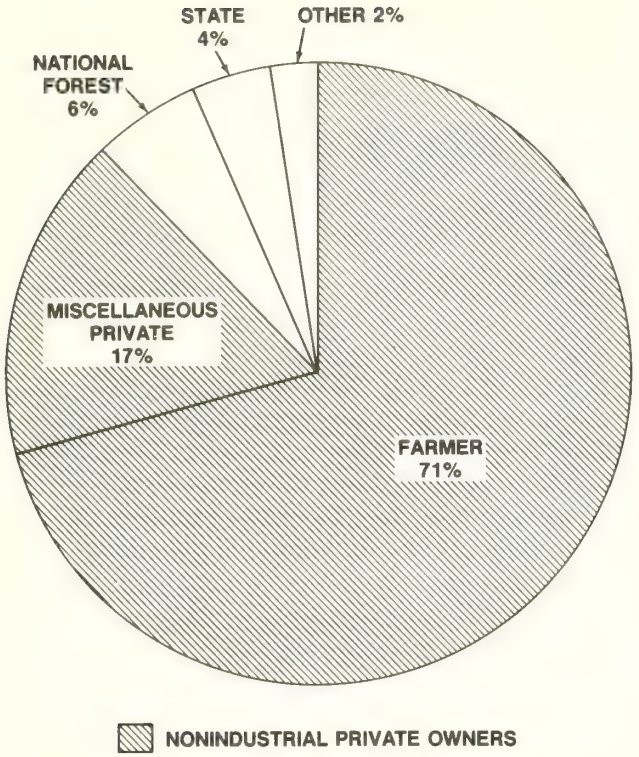

Figure 2.—*Area of commercial forest land by ownership class, Nebraska, 1983*.

in area with 146,100 acres (27 percent of the commercial area). The elm-ash-cottonwood type, usually found on moist sites along stream bottoms, follows with 122,000 acres. The cottonwood type, which grows on the same kind of site, is the third largest forest type with 82,800 acres. The lowland plains hardwood type, a mix of black walnut, hackberry, bur oak, soft maple, and boxelder that is generally found in coves and on bottomland, is the fourth largest forest type with 76,500 acres. These four forest types together account for 79 percent of the State's commercial forest area.

More Than Half Forest Stands are Sawtimber

Looking at the distribution of commercial forest land by stand-size class, sawtimber stands account for the largest area with 369,900 acres or 69 percent of the total. The ponderosa pine type contains 35 percent of these stands.

The second largest stand-size class is poletimber, with 88,900 acres. This class represents 16 percent of the commercial forest area. Fifty-seven percent of the oak-hickory forest type is poletimber.

Sapling and seedling stands account for 72,900 acres or 14 percent of the commercial area. The lowland plains hardwood and elm-ash-cottonwood types occupy 71 percent of these young stands.

The largest change in commercial forest area was in nonstocked land, which fell from 220,200 acres in 1955 to 6,100 acres in 1983, a 97-percent drop. Most of these acres changed to agricultural use, while increased stocking levels shifted some nonstocked acres into other types in the current survey.

Older Stands Predominate

The distribution of commercial forest by stand-age class shows the largest areas in the 61 to 80 year age classes and a lack of stands aged 1 to 40 years (fig. 3). Stands 61 to 70 years old lead all classes, with 76,200 acres or 14 percent of the commercial forest area, and stands aged 71 to 80 years follow with 71,200 acres or 13 percent of the total. Together, these two classes represent stands established from 1903 to 1922.

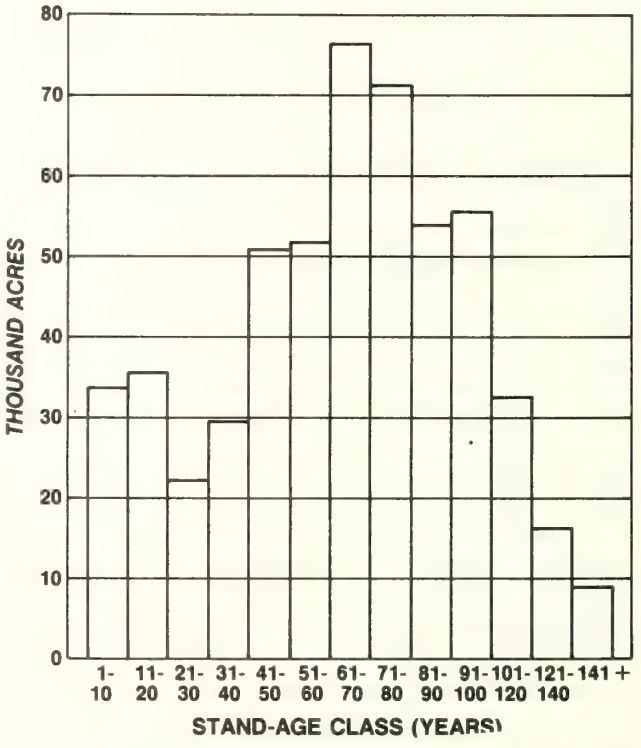

Figure 3.—*Area of commercial forest land by stand-age class, Nebraska, 1983*.

Ideally, an equal area should be in each age class to the rotation age[2] of the particular forest type, and no area should be in classes beyond rotation age. Except for the elm-ash-cottonwood and lowland plains hardwoods types, the small area of stands from 1 to 40 years old means a future shortage of mature timber when rotation age is reached.

It should be noted, however, that this imbalance in age classes is not strongly reflected in the diameter distribution of growing-stock trees of a number of desirable species such as ponderosa pine and black walnut. Comparisons of the growing-stock diameter distribution for number of trees or cubic foot volume would indicate an opportunity to offset much of the effect of this age imbalance through improved forest management to favor these desirable species.

Average Site Index is 55 Feet

Site index is one way to estimate forest site quality. Site index classifies forest land in terms of height growth of dominant or codominant trees of representative species within a forest type at age 50 years. Thirty-six percent of the commercial forest area (195,200 acres) has a site index greater than 61 feet (fig. 4).

The average site index for all types is 54.7 feet. Site index values vary by forest type. A high value for one type may be a low value for another type. The highest weighted average is 61.3 feet for the oak-hickory type, followed by ponderosa pine (60.7 feet), lowland plains hardwoods (55.8 feet), elm-ash-cottonwood (53.2 feet), cottonwood (53.0 feet), and bur oak (49.7 feet). The lowest weighted average is the 41.9 feet in the eastern redcedar-hardwood type.

Average Site Class Second Highest of Plains States[3]

Site class is another way to estimate forest site quality. Site class describes forest land in terms of its inherent capacity to grow wood based on fully stocked natural stands. Site class values are the maximum cubic feet of growth per acre per year expected from fully stocked natural stands.

[2]*Rotation age is the period of years required to establish and grow timber crops to a specified condition of maturity.*

[3]*In this paper the Plains States are considered to be North Dakota, eastern South Dakota (east of the 103rd meridian), Nebraska, and Kansas.*

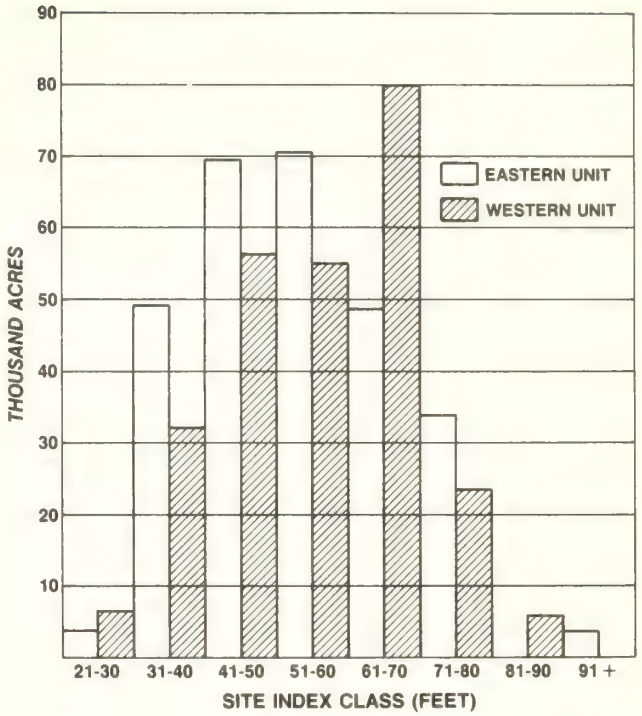

Figure 4.—*Area of commercial forest land by site-index class and Forest Survey Unit, Nebraska, 1983.*

The weighted average site class for Nebraska is 54.8 cubic feet of growth per acre per year, compared to a weighted average for Kansas of 56.8. (When managed, commercial forest land has the capacity to grow more than 20 cubic feet per acre per year.)

Forty-two Percent of Area on Deep, Well-Drained Soils

Forest site quality is modified by the soil and water conditions on a site. Physiographic class is a measure of these conditions. The five classes range from exceptionally wet sites (hydric) to very dry sites (xeric). Best growing conditions for most species are in the class midway between these two extremes (mesic). Mesic sites are the deep, well-drained soils commonly found on cove sites and on bottomland along intermittent streams. Forty-two percent of the commercial forest area is on mesic sites, including 100 percent of the oak-hickory type, 78 percent of the lowland plains hardwood type, and 49 percent of the bur oak and elm-ash-cottonwood types (table 1).

Most Forest Land is Well Stocked

Stocking can be looked at in two ways. When all live trees are considered, including rough and rotten

Table 1.--Area of commercial forest land by forest type and physiographic class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Physiographic class				
		Xeric	Xero-mesic	Mesic	Hydro-mesic	Hydric
Ponderosa pine	146.1	14.7	111.5	19.9	--	--
Eastern redcedar-hardwood	42.2	8.2	10.7	12.3	11.0	--
Oak-hickory	24.7	--	--	24.7	--	--
Bur oak	37.4	4.9	10.1	18.5	3.9	--
Elm-ash-cottonwood	122.0	--	3.4	60.3	54.9	3.4
Cottonwood	82.8	3.8	--	32.4	43.2	3.4
Lowland plains hardwoods	76.5	--	8.3	60.0	8.2	--
Nonstocked	6.1	2.3	--	--	3.8	--
All types	537.8	33.9	144.0	228.1	125.0	6.8

trees and noncommercial species, the area of commercial forest land at least medium stocked (61 percent stocked or better) is 453,700 acres or 84 percent of the total. When only growing-stock trees are considered, commercial forest acreage medium or better stocked is 324,400 acres or 60 percent of the total. The remainder of the commercial forest is either poorly stocked with growing-stock trees (207,300 acres) or nonstocked (6,100 acres).

Stocking of live trees does not present a particular problem. However, the high percentage (40 percent) of commercial forest land classed poorly stocked or nonstocked with growing-stock trees does represent an undesirable situation. Stocking is poorest in sapling and seedling stands where 63 percent of the area is poorly stocked with growing-stock trees. A larger portion of the elm-ash-cottonwood forest type is poorly stocked (58 percent) than any other type, although the eastern redcedar-hardwood type (57 percent) follows closely.

Proximity of Forest Land to Water May Affect Land Use

The suitability of a stand for harvest may be affected by its distance from open water because of wildlife, recreation, or operability considerations. Twenty-three percent of the State's commercial forest area is within one-fourth mile of a lake or pond at least 5 acres in area or a stream at least 66 feet wide. On the other hand, 26 percent is more than 20 miles from open water:

Distance to open water (Miles)	Area of commercial forest land (Thousand acres)	Percent
0 - 1/8	67.1	12
1/8 - 1/4	59.2	11
1/4 - 1	87.2	16
1 - 2 1/2	82.4	15
2 1/2 - 5	40.8	8
5 - 10	25.4	5
10 - 20	36.9	7
20+	138.8	26
Total	537.8	100

Forest Access Excellent

Access to Nebraska's forests is excellent. Forty-two percent of the commercial area is within one-fourth mile of a maintained road (one that is graded at least once a year), and 91 percent of it is within 1 mile of a road:

Distance to road (Miles)	Area of commercial forest land (Thousand acres)	Percent
0 - 1/8	117.5	22
1/8 - 1/4	107.5	20
1/4 - 1	262.0	49
1 - 2 1/2	45.9	8
2 1/2 - 5	4.9	1
5 - 10	--	--
10 - 20	--	--
20+	--	--
Total	537.8	100

Twenty-three Percent of Forest Land Unproductive

Nebraska has two kinds of forest land on which industrial wood is not harvested: unproductive forest (162,300 acres) and productive-reserved forest (18,200 acres). Unproductive forest land is incapable either of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood because of adverse site conditions. Productive-reserved forest land is commercial forest land withdrawn from timber utilization through statute, administrative regulation, designation, or exclusive use for Christmas-tree production as indicated by annual shearing.

Eighty-six percent of the unproductive forest land is owned by farmers and miscellaneous private parties. Most of the unproductive forest is in the cottonwood type (24 percent), the eastern redcedar-hardwood type (19 percent), and the elm-ash-cottonwood type (18 percent).

The productive-reserved forest land is owned by public agencies. The cottonwood type (45 percent) in the east and the ponderosa pine type (26 percent) in the west account for most of the productive-reserved area.

Nonforest Land with Trees Offers Limited Commercial Opportunities

The area of nonforest land with trees (1.1 million acres) is more than twice the area of commercial forest land in the State. However, because land needs only one or more trees per acre that are at least 5-inches d.b.h. in order to meet this definition, trees are usually very sparse on these areas. Two exceptions are wooded strips and windbreaks (see Definitions of Terms in Appendix).

Wooded strips amount to 262,200 acres in Nebraska. The bulk of these strips is in the elm-ash-cottonwood type (113,900 acres) and the cottonwood type (68,900 acres), and almost all of it is owned by private parties. Fifty-eight percent of the area is in poletimber stands, 36 percent is in sawtimber stands, and only 6 percent is in sapling and seedling stands. Fifty-two percent of the wooded strip area supports stands older than 60 years. Although small tract size sometimes imposes constraints on logging, these wooded strips are frequently logged in conjunction with adjacent commercial land.

Windbreaks total 139,100 acres in the State. Because their primary purpose is protection from wind, these areas are of little significance for timber supply except for occasional firewood cuttings. Windbreaks are more numerous in the Eastern Unit (90,800 acres) than in the Western Unit (48,300 acres). Both wooded strips and windbreaks are important habitat for wildlife.

One other important class of nonforest land with trees is wooded pasture, which is grazed land with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Wooded pasture totals 78,300 acres. Cottonwood (18,900 acres) and bur oak (16,000 acres) are the most common forest types.

TIMBER VOLUME

Softwood Volume Shows Substantial Gain Between Inventories

Growing-stock volume on commercial forest land in Nebraska increased 23 percent between 1955 (370 million cubic feet) and 1983 (456 million cubic feet). The surplus of softwood growth over removals between inventories is the cause of these building inventory volumes.

The softwood growing-stock volume, which is 94 percent ponderosa pine, doubled its volume since 1955. However the hardwood volume, which accounts for 63 percent of the growing-stock total, remained constant between inventories:

Species group	Growing-stock volume	
	1955	1983
	(Thousand cubic feet)	
Softwoods	84,600	170,256
Hardwoods	285,600	285,755
Total	370,200	456,011

Growing-stock volume per acre increased 64 percent from 518 cubic feet per acre in 1955 to 848 cubic feet per acre in 1983. Sawtimber volume is currently 3,183 board feet[4] per acre, a total volume of 1.7 billion board feet.

The two Survey Units contain nearly equal volumes of growing stock. However, the Eastern Unit showed a slight loss of volume while the Western Unit had a 60-percent increase (table 2).

Dawes County (52 million cubic feet) contains the largest growing-stock volume in the Western Unit, followed by Sioux (42 million), Sheridan (35 million),

[4]*International 1/4-inch rule.*

Table 2.--Net volume of growing stock in 1955 and 1983 by Forest Survey Unit and change since 1955, Nebraska

Forest Survey Unit	Growing-stock volume 1955	1983	Change
	Thousand cubic feet		Percent
Eastern Unit	226,300	225,748	-0.2
Western Unit	143,900	230,263	+60.0
All Units	370,200	456,011	+23.2

and Knox (16 million) (fig. 5). Cass County (11 million cubic feet) leads the Eastern Unit in volume.

Together, nonindustrial private owners account for 85 percent of the growing-stock volume. Farmers clearly dominate with 72 percent of the total; miscellaneous private parties own 14 percent of the volume. Public agencies own the remaining 13 percent.

Nongrowing-Stock Volume Significant

In addition to the volume in growing-stock trees, volume in rough and rotten, short-log, and salvable dead trees add another 106 million cubic feet to the State's total, bringing total volume on commercial forest land in Nebraska to 562 million cubic feet (table 3).

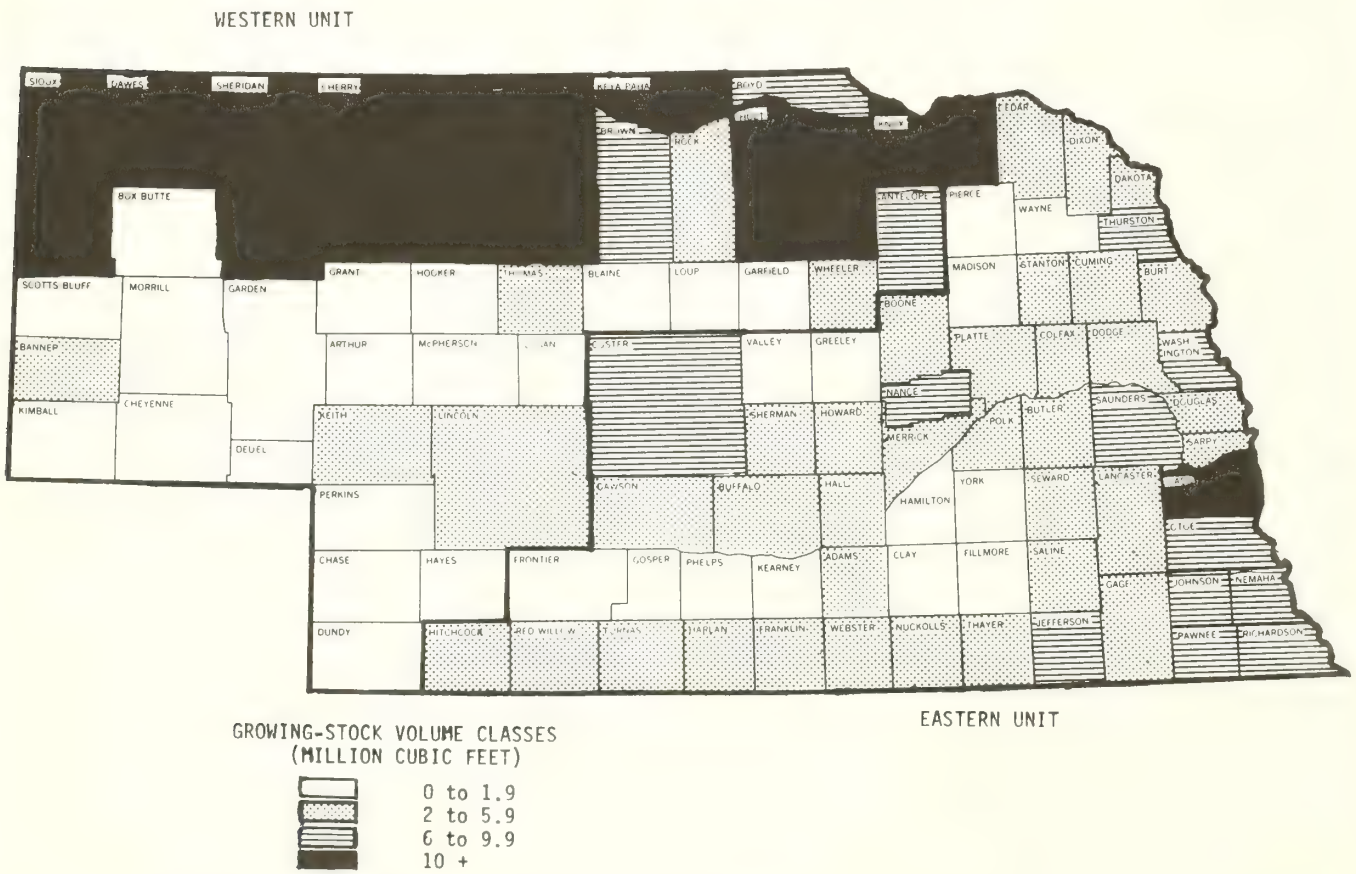

Figure 5.—*Growing-stock volume in Nebraska counties, 1983.*

Table 3.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Nebraska, 1983

(In million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Growing stock			
Sawtimber	353.0	136.0	217.0
Poletimber	103.0	34.2	68.8
Total	456.0	170.2	285.8
Cull			
Rough and rotten	76.8	12.4	64.4
Short-log	19.5	2.7	16.8
Total	96.3	15.1	81.2
Salvable dead	9.3	1.3	8.0
All classes	561.6	186.6	375.0

The volume in short-log trees (commercial species that contain one merchantable 8- to 11-foot saw log but not a 12-foot saw log or two noncontiguous 8- to 11-foot saw logs) is 80 million board feet. This brings total sawtimber volume on commercial forest land to 1,792 million board feet for the State.

Although cull and salvable dead trees take up space that could be used by more valuable growing-stock trees, they are valuable to wildlife. In addition, many of these trees can be used for timber products such as low-grade saw logs or bolts and fuelwood.

More Than One-third of Growing-Stock Volume is Ponderosa Pine

In 1955, cottonwood led all other species in growing-stock volume with 38 percent of the total volume. Today, cottonwood is 31 percent and ponderosa pine represents 35 percent of the total growing-stock volume on commercial forest land. This is a 101 percent increase over the 1955 ponderosa pine growing-stock volume. In 1955, elm was third to cottonwood and ponderosa pine in growing-stock volume, with a large concentration of volume in the larger, overmature trees most susceptible to Dutch elm disease. The decimation of elm by the disease between the two surveys—elm growing-stock volume decreased from 51 to 12 million cubic feet—caused a reordering of volume rankings. The white oak species group moved up to third in 1983 with 39 million cubic feet, a 24-percent gain over its 1955 volume of 32 million cubic feet when it ranked fourth behind cottonwood, ponderosa pine, and elm. Green ash (26 million cubic feet), hackberry (17 million), and black willow (11 million) are other species with large volumes. Black walnut, which is highly valued and in great demand for furniture, cabinets, gun stocks, and other high-quality products, increased 51 percent from its 1955 volume of 3 million cubic feet. Jack pine and green ash were the only other species besides elm to decline in volume between surveys.

The order of species by sawtimber volume is about the same as that of growing stock. Ponderosa pine dominates with 46 percent of the total (782 million board feet). In the Western Unit, ponderosa pine is 77 percent of the total. Cottonwood contains the second largest sawtimber volume, with 511 million board feet, or 30 percent of the total. Elm, which was sixth in growing-stock volume, slipped to ninth in sawtimber volume (17 million board feet).

Trees 15 Inches in Diameter and Larger Make Up Half of Growing-Stock Volume

Forty-nine percent of the State's 1983 volume of growing stock is in trees in the 15-inch diameter class and larger. Total growing-stock volume has no gaps between succeeding diameter classes that might cause future supply problems, although uneven volumes by diameter class may pose problems in the future supply of red oak and black willow. Twenty percent of the volume is in trees 23 inches in diameter and greater, due largely to the high proportion of cottonwood volume in these bigger trees.

Fifty-two percent of the total cottonwood volume is in these larger trees.

Three-quarters of the total growing-stock volume is in three forest types—ponderosa pine (34 percent), cottonwood (23 percent), and elm-ash-cottonwood (19 percent).

Average volume per acre of growing stock on commercial forest land in 1983 was 848 cubic feet compared to 518 cubic feet in 1955. Average volume per acre was highest in the cottonwood forest type (1,260 cubic feet), followed by the ponderosa pine type (1,073), the elm-ash-cottonwood type (725), and the oak-hickory type (713).

The average sawtimber volume per acre in 1983 was 3,183 board feet. The ponderosa pine type (averaging 5,216 board feet per acre) is followed by the cottonwood type (4,620 board feet per acre), elm-ash-cottonwood (2,134), and oak-hickory (1,907).

Less Than One-third of Sawtimber Volume in Better Grades

The total volume in sawtimber trees was estimated by butt log grade based on the sampled tree volumes. These volumes could not be converted to whole-tree log grades because the means to make this conversion accurately are not available. Volumes represent the total volume in trees with the indicated butt log grade. Because a large portion of a tree's volume is in the butt log, the volume distribution by whole tree log grades is not substantially different from that of volumes in trees by butt log grade.

Only 31 percent of the sawtimber volume is in the better log grades 1 and 2. (See Log Grade section in the Appendix for an explanation of individual log grades.) Only two species have more than half of their sawtimber volume in these better log grades. Cottonwood has 70 percent and hackberry 57 percent of their volume in these higher log grades. Ponderosa pine has only 5 percent of its volume in these better grades, primarily because of the large proportion of volume in small trees.

GROWTH, MORTALITY, REMOVALS, AND BIOMASS

Net Growth Up 31 Percent

Net annual growth of growing stock on commercial forest land increased 31 percent between surveys, from 8.5 million cubic feet in 1955 to 11.1 million cubic feet in 1982. The Eastern Unit accounts for 50 percent of the growing-stock volume but only 42 percent of net growth.

The average cubic foot growth rate in the State in 1982 was 2.4 percent of growing-stock inventory, compared to 2.3 percent in 1955. Net growth per acre increased from 11.9 cubic feet in 1955 to 20.6 cubic feet in 1982. The highest average cubic foot growth rate was in the Western Unit with 2.8 percent, while the Eastern Unit had 2.1 percent. Among species with the highest cubic foot growth rates are eastern redcedar (6.3 percent), hackberry (4.0 percent), and soft maple (3.7 percent).

Net annual growth represents growth and ingrowth less natural mortality. The total volume lost by the death of a large, overmature tree cancels out the growth in many smaller diameter trees of the same species. Therefore, a species with a larger proportion of its trees and volume in the larger diameter classes, those that are most subject to mortality, tend to have a lower net annual growth rate. For example, cottonwood has a net annual growing-stock growth rate well below average of 1.2 percent and a sawtimber growth rate of 0.9 percent. Sixty percent of the cottonwood cubic foot volume is in trees 21 inches in diameter and larger, compared to 9 percent for all other species combined.

Net annual growth of sawtimber in 1982 amounted to 42.7 million board feet giving a growth rate of 2.5 percent of inventory. Sawtimber growth per acre averaged 79.5 board feet.

Potential Growth Indicates Higher Growth Rate Possible

Because potential net growth cannot be measured accurately, we roughly estimated potential net growth by using site class information collected during the latest inventory. Site class values indicate the maximum average annual net growth per acre attainable in fully-stocked, unmanaged stands.

We estimated potential growth in the State (table 4) by multiplying the area of commercial forest land in each site class by the midpoint of the growth range in that class. Using this method, we found the potential net annual growth for Nebraska to be 29.7 million cubic feet or 55.2 cubic feet per acre. This method assumes that stands are fully stocked and evenly distributed by age class up to rotation age for each forest type and the results cannot be directly compared to the current growth in

Table 4.--Estimation of potential net annual growth on commercial forest land, Nebraska, 1983

Site class	Area of commercial forest land	Potential net growth per acre[1/]	Total potential net growth
(Cu.ft/acre/year)	(Thousand acres)	(Cu.ft./acre/year)	(Thousand cu.ft./year)
120+	11.8	142.0	1,675.6
85-119	85.2	102.0	8,690.4
50-84	126.2	67.0	8,455.4
20-49	314.6	34.5	10,853.7
All classes	537.8	55.2	29,675.1

[1/]Midpoint of site class interval.

Nebraska of 20.6 cubic feet per acre per year. One method for evaluating current and potential growth was presented by Raile and Hahn (1982) for the aspen forest type in Minnesota. Such an evaluation is beyond the scope of this paper. Still, this potential growth is not the ultimate growth possible. Higher volumes of growth can be attained by thinning, applying fertilizers, and using genetically superior stock.

Mortality Increased 15 Percent

Net annual mortality of growing-stock trees increased from 1.9 million cubic feet in 1955 to 2.2 million in 1982, a 15-percent gain. The mortality rate in 1982 was 0.5 percent of inventory, the same as 1955.

The largest volume of mortality (69 percent of the total) was due to "unknown and other" causes. This is true because of the difficulty experienced by field crews in determining the *primary* cause of death in trees that had been dead for several years. Among the known causes of mortality, disease accounted for the largest volume, 14 percent of the total. Diseases of elm, mainly Dutch elm disease, account for 43 percent of the disease-caused mortality.

Sawtimber mortality amounted to 7.3 million board feet in 1982—0.4 percent of inventory.

Timber Removals Increased 147 Percent

Timber removals from growing stock jumped from 3.8 to 9.4 million cubic feet between surveys, a 147-percent gain. Sawtimber removals increased from 18.0 to 36.3 million board feet, a 102-percent increase.

Although the Eastern Unit contains 50 percent of the State's growing-stock inventory, it accounts for 80 percent of the total growing-stock removals volume. The other 20 percent from the Western Unit supplied 94 percent of the softwood removals. All of the removals from growing stock were from private land.

The volume of removals increased between surveys for most species but declined for a few species. Removals of black walnut growing stock in 1982 were 43 percent lower than the 1953 volume, while sawtimber removals declined from 1.6 million board feet to 1.0 million board feet. The removals volumes for soft maple and elm also declined 88 percent and 31 percent, respectively, between surveys.

Cottonwood accounted for the largest volume of growing-stock removals in 1982 with 3.2 million cubic feet, compared to 1.2 million cubic feet in 1953. Removals of oak were the second largest in 1982 with 2.5 million cubic feet.

The situation is similar for sawtimber removals, with cottonwood accounting for 48 percent of sawtimber removals (17.4 million board feet) and oak in second place with 19 percent (6.9 million board feet).

Ninety percent of the growing-stock removals (8.4 million cubic feet) were harvested for roundwood products, primarily fuelwood and saw logs. Other removals (trees removed but not used for products, or trees left standing but "removed" from the commercial forest classification by land use change)

amounted to 5 percent of the removals volume or 0.5 million cubic feet. Logging residue (unused trees killed by logging or the unused portion of cut trees) accounted for the remaining 5 percent of the removals volume or 0.4 million cubic feet.

Fuelwood (5.2 million cubic feet) accounted for 62 percent of the volume of roundwood products from growing stock in 1982, and saw logs (2.9 million cubic feet) accounted for 35 percent.

Ninety-four percent of the sawtimber removals volume (34.0 million board feet) was harvested for roundwood products. The proportion of saw and veneer logs cut from sawtimber changed from 46 percent of total roundwood products cut from sawtimber in 1953 to 56 percent in 1982. The proportion of fuelwood and posts cut from sawtimber shifted from 46 percent of total roundwood products cut from sawtimber in 1953 to 42 percent in 1982.

Hardwood Removals Exceed Growth

One way to evaluate the level of removals is to compare it with growth. However, caution is needed because the volume of growth contains growth from many trees too small to be part of the removals volume.

In 1982 growing-stock removals of 9.4 million cubic feet amounted to 84 percent of the volume of net annual growth (11.1 million cubic feet). Sawtimber removals of 36.3 million board feet were 85 percent of net annual growth (42.7 million board feet). These surpluses of growth over removals are created by the high softwood growth rate. For hardwoods, growing-stock removals exceeded growth by 73 percent.

Biomass

Interest in whole-tree utilization is increasing as demand for wood fiber increases. Therefore, we estimated of the above-ground weight of live trees in Nebraska as part of the inventory.

The total biomass of all live trees at least one inch in d.b.h. on commercial forest land in the State amounts to 29.0 million green tons, an average of 54 tons per acre. The largest total biomass is in the elm-ash-cottonwood forest type with 6.2 million green tons (51 tons per acre), but the greatest biomass per acre is in the cottonwood type with 5.9 million tons (72 tons per acre). Among species groups, ponderosa pine contributes the largest share of biomass (7.5 million green tons), followed by cottonwood (7.4 million tons) and white oak (4.1 million tons).

Seventy-two percent of live tree biomass is located in growing-stock trees. Cull trees provide 20 percent of the State's biomass, and trees 1 to 5 inches in diameter add the remaining 8 percent:

Biomass component	Weight (Million green tons)	Percent
Growing-stock trees		
Boles	14.7	51
Tops and limbs	6.2	21
Cull trees		
Boles	4.3	15
Tops and limbs	1.5	5
1- to 5-inch trees	2.3	8
Total	29.0	100

PROJECTED TIMBER SUPPLY

Although Nebraska's timber resource is small when viewed from a National perspective, the State's output of forest products plays a significant role in the supply-demand relation of many local businesses, including some in adjoining States.

To see what the future holds for Nebraska's timber resource, we made two 30-year projections using the Timber Resource Analysis System (TRAS) program (Alig *et al.* 1982), a computer program for updating, backdating, and projecting timber resource information. The first projection assumes a continuation of recent levels of timber removals (low removals option), and the second assumes a higher level of removals (high removals option). Separate projections were made for softwoods and hardwoods. TRAS uses a stand projection technique involving input of number of trees, growth rates, mortality rates, and removal rates, all by 2-inch diameter classes, along with assumed total removals by year and assumed ingrowth into the 2-inch diameter class.

Both options assume that: (1) the area of commercial forest land will not change (some decline is expected, but not enough to affect the results of the projection); (2) radial growth will decline in relation to the increase of basal area per acre of trees; (3) the intensity of forest management will continue at the rate indicated by recent trends; and (4) the volume of "other" removals will drop during the period as more of these trees are utilized for products.

Low Removals Option Projection

The low option assumes that timber removals will decrease from 9.4 million cubic feet in 1982 to 7.1 million cubic feet in 2002. Then they will increase to 8.3 million in 2013. Growth is projected to exceed removals throughout the period, to peak about 2007, then to slowly turn down. Therefore, growing-stock inventory is projected to increase by 151.5 million cubic feet to 607.5 million cubic feet (fig. 6). The assumed average annual change in removals used in the projections is shown in the following tabulation:

Period	Low removals option		High removals option	
	Soft-woods	Hard woods	Soft-woods	Hard woods
	(Percent annual change)			
1983-1987	8.2	−3.4	10.1	−1.3
1988-1992	7.7	−3.1	10.8	−1.5
1993-1997	7.1	−2.9	10.0	−1.8
1998-2002	6.7	−2.7	8.8	−2.0
2003-2007	6.4	−2.5	7.3	−1.7
2008-2013	6.1	−2.3	6.1	−1.5

Growth is projected to increase from 11.1 million cubic feet in 1982 to 13.3 million cubic feet in 2007 and then to turn down to 13.2 million cubic feet in 2013. The surplus of growth over removals was 1.7 million cubic feet in 1983. This surplus is projected to grow to 6.2 million cubic feet in 2003 and then taper off to 5.1 million cubic feet in 2013.

Growing-stock inventory is projected to climb during the entire period but to increase at a slower rate during the last decade. The 1983 inventory of 456.0 million cubic feet is projected to reach 607.5 million cubic feet by 2013—a 33-percent gain.

High Removals Option Projection

Removals under this option reflect a higher level of harvesting than the previous option. Timber removals are projected to exceed growth by 2012, and inventory is projected to turn down at that time (fig. 7).

Timber removals jump from 9.4 million cubic feet in 1982 to 13.0 million cubic feet in 2013, a 38-percent gain. Expanded markets for forest products are assumed over those assumed for the low option.

Net growth is projected to climb from 11.1 million cubic feet in 1982, peak at 13.2 million cubic feet in 2002 and then fall off to 12.6 million in 2012. The excess of growth over removals in 1982, 1.7 million cubic feet, is projected to increase to 3.4 million cubic feet in 1999 and then to vanish completely in 2012 when the growth and removals curves intersect.

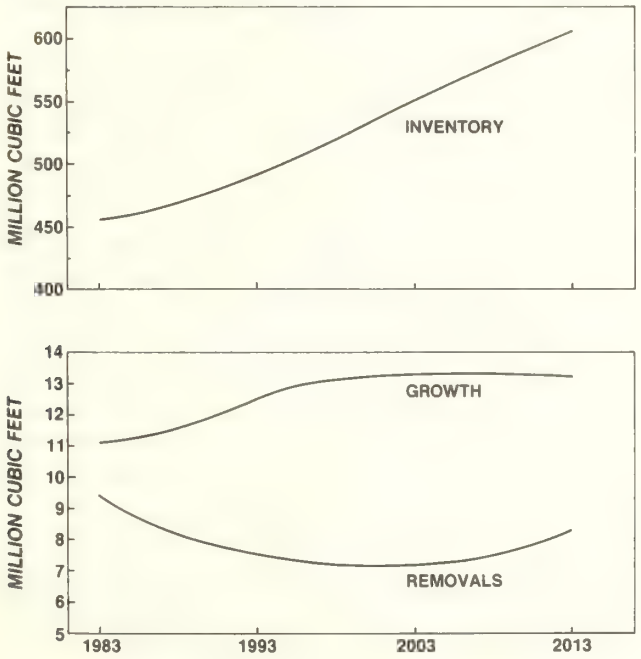

Figure 6.—*Removals, net growth and inventory of growing stock in Nebraska, 1983, low removals option projection for 1983–2013.*

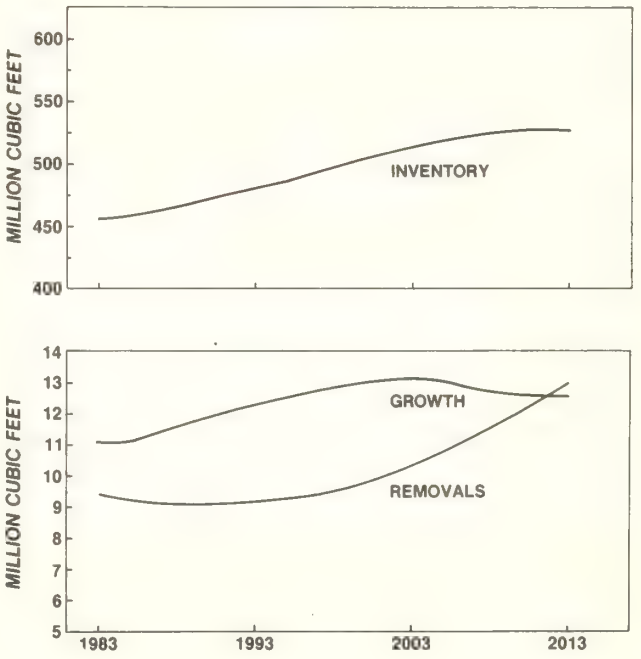

Figure 7.—*Removals, net growth and inventory of growing stock in Nebraska, 1983, high removals option projections for 1983–2013.*

Inventory rises more slowly than for the low option, from 456.0 million cubic feet in 1983 to a peak of 527.5 million cubic feet in 2012. Inventory will decline beyond 2012 in response to the deficit of removals over growth.

Timber Supply Likely to Increase

These projections represent reasonable bounds within which the actual future forest situation will develop. Inventories should increase between 16 and 33 percent by 2013, however the low and high removals options are valid only to the extent that the assumptions upon which they are based are realized. Projections for the first decade are the most reliable because changing economic and social conditions may invalidate longer-range assumptions and reduce the value of projections beyond this decade. Also, economic development initiatives by the State could increase utilization of the resource.

These projections are not necessarily desirable goals from silvicultural, social, or economic perspectives. They are simply indicators of what is likely to happen if forests in the State are managed much as they have been for the past 28 years and if harvesting occurs at a "high" or a "low" level. Inventory is likely to continue to accumulate at a rate close to that of recent years for about two decades. During the third decade it will slow down or decline. Higher growth and larger inventories toward the end of the projection period are possible if timber management efforts are increased beyond that of recent trends. More complete utilization of residues, tree tops, and limbs, the volumes of which are not included in growing-stock inventories, is desirable and would further extend wood supplies. The interest in fuelwood as an energy source suggests that this may be happening. Inventories could be smaller than projected if the area of commercial forest land declines significantly.

Total output of fuelwood from roundwood more than doubled from 64,593 cords in 1953 to 169,000 cords in 1980. This increased utilization for fuelwood presents both an opportunity and a threat to improved forest management. If the lower quality trees are taken for fuelwood, a market incentive will be provided to accomplish timber stand improvement to release desirable growing-stock trees. On the other hand, if many of the best young growing-stock trees are taken out for fuelwood, the future potential to produce quality saw logs will be greatly reduced. The key is proper forest management. The importance of fuelwood removals is stressed by the fact that 62 percent of all growing stock removals for products are for fuelwood.

Because nonindustrial private forest landowners possess 88 percent of the commercial forest area and 85 percent of the growing-stock volume, they control the future of the State's forest resource. Improving the forest resource requires that private owners practice sound forest management. Policies providing practical technical information and field assistance on timber sale preparation and administration along with forest management education will help to improve the forest resource. These owners might also be persuaded by policies that make timber-growing more profitable to them, such as efforts to expand markets for timber products and to increase financial incentives for performing needed management work.

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APPENDIX

ACCURACY OF SURVEY

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State level. Consequently, the reported figures are estimates only. The sampling errors mean the chances are two out of three that the true inventory value is within the limits indicated.

For example, the estimated growing-stock volume in Nebraska in 1983, 456.0 million cubic feet, has a sampling error of ±8.6 percent (±39.2 million cubic feet). Therefore, the growing-stock volume from a 100-percent inventory would have a two in three chance of falling between 416.8 and 495.2 million cubic feet.

The following tabulation shows the sampling errors for the 1983 Nebraska Inventory:

Item	State total	Sampling error
Growing stock	(Thousand cubic feet)	(Percent)
Volume	456,011	8.6
Growth	11,099	10.9
Removals	9,350	20.6
Sawtimber	(Thousand board feet)	
Volume	1,711,873	9.4
Growth	42,729	14.3
Removals	36,264	20.9
Commercial forest area	(Thousand acres) 537.8	6.0

As survey data are broken down into smaller sections, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for growing-stock volume in a particular county is higher than that for total growing-stock volume in the State (table 95 shows the sampling errors for smaller estimates).

SURVEY PROCEDURE

The major steps in the survey of Nebraska were as follows:

1. A total of 260,180 1-acre points were systematically distributed across aerial photos of the entire State. Photo interpretors classified these points as forest land (5,564), nonforest land with trees (4,770), nonforest land without trees (247,873), questionable (69), and water (1,904), in order to make a preliminary estimate of forest area. Next, all of the forest, nonforest with trees, and questionable points were stereoclassified as to forest type, stand-size class, and density. Then 306 points classed as forest, 3 points classed as questionable, and 273 points classed as nonforest with trees were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the aerial photos were taken. At each of 159 commercial forest locations, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. Tree measurements made at commercial forest locations were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization during 1980 were obtained from mill surveys. The Nebraska Forest Service canvassed resident sawmills and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-State primary wood-using mills such as sawmills and veneer mills to determine their use of timber from Nebraska. The Nebraska Forest Service supplied 1980 estimates of fuelwood and post production from roundwood.

3. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Nebraska primary wood-using plants. Timber cut for products by ownership class was determined by a canvass of public and forest industry timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners".

4. Wood utilization factors for converting fuelwood, posts, and timber products output to removals from growing-stock were obtained during the 1971-1972 Missouri utilization study.

5. Field data were sent to St. Paul, Minnesota, to be processed and analyzed.

COMPARING NEBRASKA'S SECOND INVENTORY WITH THE FIRST INVENTORY

Data from new forest surveys are often compared with data from earlier ones to determine trends in

forest areas and volumes. Changes in procedures and definitions between surveys make it necessary to adjust earlier survey data so they are comparable to data from the new survey.

The published 1955 area of commercial forest land, 1,050,800 acres, was adjusted due to definitional changes between surveys. Some land now defined as nonforest with trees was defined as commercial forest land in 1955. Also, new site productivity curves for ponderosa pine caused some land previously classified as commercial to be classified as unproductive forest land in the current survey. The adjusted 1955 area, 705,700 acres, can be compared directly with the 1983 area (537,800 acres).

The Timber Resource Analysis System (a USDA Forest Service computer program for updating, backdating, and projecting timber volume, growth, mortality, and removals) recalculated 1955 volumes using 1983 estimates of cubic foot volume per tree and 1983 board foot-cubic foot ratios. This volume adjustment was necessary so that volume differences between surveys represented actual change and not merely change in the volume equations used on each occasion.

LOG GRADE

In Nebraska the butt log of every sawtimber tree sampled was graded for quality. Logs were graded on the basis of external characteristics. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber" (Vaughn *et al.* 1966). The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded as follows:

Forest Service standard grades for hardwood factory saw logs

Grading factors		Specifications							
		Log grade 1			Log grade 2				Log grade 3
Position in tree		Butts only	Butts and uppers		Butts and uppers				Butts and uppers
Scaling diameter, inches		[1]13-15	16-19	20+	[2]11+	12+			8+
Length without trim, feet			10+		10+	8-9	10-11	12+	8+
Required clear cuttings[3] of each of three best faces[4]	Min. length, feet	7	5	3	3	3	3	3	2
	Max. number	2	2	2	2	2	2	3	No Limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep and crook allowance	For logs with less than one-fourth of end in sound defects		15 percent			30 percent			50 percent
	For logs with more than one-fourth of end in sound defects		10 percent			20 percent			35 percent
Maximum scaling deduction			40 percent[5]			50 percent[6]			50 percent

[1]Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.
[2]Ten-inch logs of all species can be #2's if they otherwise meet requirements for small #1's.
[3]A clear cutting is a portion of a face, extending the width of the face, that is free of defects.
[4]A face is one-fourth of the surface of the log as divided lengthwise.
[5]Otherwise #1 logs with 41-60 percent deductions can be #2.
[6]Otherwise #2 logs with 51-60 percent deductions can be #3.

Forest Service standard specifications for hardwood construction logs (tie and timber logs)

Position in tree		Butt and upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		One-fourth of the diameter at the small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of one-third of the log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed one-third of the log diameter at point of occurrence.
	Holes	Any number provided none has a diameter over one-third of the log diameter at point of occurrence, and none extends more than 3 inches into included timber.[2]
Unsound surface defects		Same requirements as for sound defects if they extend into included timber.[2] No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit one shake not to exceed one-fourth the scaling diameter and will admit a longitudinal split not extending more than 5 inches into the contained timber.

[1]These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only non-factory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection of construction logs is given first priority, then it may be necessary to subdivide the class into grades.

[2]Included timber is always square, and dimension is judged from small end.

Softwood species were graded according to the following specifications:

LOG GRADES FOR SOFTWOOD LOGS

Grade 1

1. Logs must be 16 inches or larger, 10 feet or longer, and with deduction for defect not over 30 percent of gross scale.
2. Logs must be at least 75 percent clear on each of three faces.
3. All knots outside clear cutting must be sound and not over 2-½ inches in diameter.

Grade 2

1. Logs must be 12 inches or larger, 10 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.
2. Logs must be at least 50 percent clear on each of three faces or 75 percent clear on two faces.

Grade 3

Logs must be 6 inches or larger, 8 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.

Note: (A) Diameters are diameter inside bark at small end of log.
(B) Percent clear refers to percent clear in one continuous section.

PRINCIPAL TREE SPECIES GROUPS IN NEBRASKA[5]

Softwoods
- Ponderosa pine ..... *Pinus ponderosa*
- Eastern redcedar ..... *Juniperus virginiana*
- Other softwoods
  - Rocky mountain juniper.. *Juniperus scopulorum*

Hardwoods
- White oak
  - Bur oak ..... *Quercus macrocarpa*
  - White oak ..... *Quercus alba*
  - Chinkapin oak ..... *Quercus muehlenbergii*
  - Post oak ..... *Quercus stellata*
- Red oak
  - Northern red oak ..... *Quercus rubra*
  - Black oak ..... *Quercus velutina*
- Hickory
  - Shagbark hickory ..... *Carya ovata*
  - Bitternut hickory ..... *Carya cordiformis*
- Basswood
  - American basswood ..... *Tilia americana*
- Soft maple
  - Red maple ..... *Acer rubrum*
  - Silver maple ..... *Acer saccharinum*
- Boxelder ..... *Acer negundo*
- Elm
  - American elm ..... *Ulmus americana*
  - Siberian elm ..... *Ulmus pumila*
  - Slippery elm ..... *Ulmus rubra*
  - Rock elm ..... *Ulmus thomasii*
- Green ash ..... *Fraxinus pennsylvanica*
- Cottonwood
  - Eastern cottonwood ..... *Populus deltoides*
  - Plains cottonwood ..... *Populus deltoides* var. *occidentalis*
- Black willow ..... *Salix nigra*
- Hackberry ..... *Celtis occidentalis*
- Black walnut ..... *Juglans nigra*
- Other hardwoods
  - Honeylocust ..... *Gleditsia triacanthos*
  - Red mulberry ..... *Morus rubra*
  - Paper birch ..... *Betula papyrifera*
  - Texas buckeye ..... ***Aesculus glabra var. arguta***
  - Northern catalpa ..... *Catalpa speciosa*
  - Kentucky coffeetree ..... *Gymnocladus dioicus*
  - Osage-orange ..... *Maclura pomifera*
  - Black locust ..... *Robinia pseudoacacia*
  - White mulberry ..... *Morus alba*

[5] *The common and scientific names are based on: Little, Elbert L., Jr. Checklist of United States Trees (Native and Naturalized). Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture, Forest Service; 1979. 375 p.*

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.

DEFINITION OF TERMS

Basal area.--The area in square feet of the cross section at breast height of a single tree. When the basal area of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass.--The above-ground volume of all live trees (including bark and foliage). Biomass is made up of 5 components:

Growing-stock bole.--Biomass of a growing-stock tree from a 1-foot stump to a variable 4-inch top.

Growing-stock tops and limbs.--Biomass of a growing-stock tree from a 1-foot stump minus the growing-stock bole.

Cull bole.--Biomass of a cull tree from a 1-foot stump to a variable 4-inch top.

Cull tops and limbs.--Biomass of a cull tree from a 1-foot stump minus the cull bole.

1- to 5-inch trees.--Biomass of all live trees from 1- to 5-inches in diameter at breast height.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land are capable of producing more than 20 cubic feet per acre per year of annual growth when managed. Currently inaccessible and inoperable areas are included except when the areas involved are small and unlikely to become suitable for producing industrial wood in the foreseeable future.)

Commercial species.--Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.--Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Cull.--Portions of a tree that are unusable for industrial wood products because of rot, form, or other defect.

Diameter classes.--A classification of trees based on diameter outside bark, measured at breast height (4½ feet above the ground). (Note: d.b.h. is the common abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h. inclusive.)

Farm.--Any land from which $1,000 or more of agricultural products were produced and sold during the year.

Farmer-owned lands.--Land owned by operators of farms. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest industry land.--Land owned by companies or individuals operating primary wood-using plants, except sawmills sawing less than 100,000 board feet annually.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classes as forest if less than 120 feet wide. Also see definitions of land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, nonforest land, and water.

Forest trees.--Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Forest types.--A classification of forest land based upon the species forming a plurality of live tree stocking. Major forest types in Nebraska are:

Ponderosa pine.--Forests in which ponderosa pine comprises a plurality of the stocking.

Eastern redcedar-hardwood.--Forests in which hardwoods comprise a plurality of the stocking but in which eastern redcedar comprises 25 percent or more of the stocking. Found on dry uplands, usually abandoned pastures or fields.

Oak-hickory.--Forests in which upland oaks (white, black) or hickory, singly or in combination, comprise a plurality of the stocking, except for stands classed as eastern redcedar-hardwood or as bur oak. Occurs on a variety of soils.

Bur oak.--Forests in which bur oak comprises a majority of the stocking. Occurs on dry uplands and ridges.

Elm-ash-cottonwood.--Lowland forest in which elm, ash, cottonwood, and willow, singly or in combination, comprise a plurality of the stocking, except for those in which cottonwood or willow comprise a majority of the stocking. Found on first or second bottoms of major streams.

Cottonwood.--Forests in which cottonwood comprises a majority of the stocking.

Lowland plains hardwoods.--Forests in which black walnut, hackberry, bur oak, soft maple, and boxelder, singly or in combination, comprise a plurality of the stocking. Commonly found in coves and bottomlands.

Gross area.--The entire area of land and water as determined by the Bureau of the Census, 1980.

Growing-stock trees.--Live trees of commercial species, excluding rough and rotten trees.

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and over, from a 1-foot stump to a minimum 4 inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs. Cubic feet can be converted to standard cords by dividing by 79. One standard cord is 128 cubic feet of stacked wood, including bark and air.

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.--Includes former cropland, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivating, seeding, irrigating, or clearing of trees or brush and less than 16.7 percent stocked with live trees.

Indian land.--All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Land area.--A. *Bureau of the Census*.--The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

B. *Forest Inventory and Analysis*.--The same as the Bureau of the Census, except minimum width of streams, etc., is 120 feet and minimum size of lakes, etc., is 1 acre.

Live trees.--Growing-stock, rough, and rotten trees 1 inch d.b.h. and larger.

Log grades.--A classification of logs based on external characteristics as indicators of quality or value. (See Appendix for specific grading factors used.)

Logging residues.--The unused growing stock portions of trees cut or killed by logging.

Maintained road.--Any road, hard-topped or other surfaces, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.--Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Merchantable.--Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

Miscellaneous federal land.--Federal land other than National Forest and Indian land.

Miscellaneous private land.--Privately owned land other than forest-industry and farmer-owned land.

Mortality.--The volume of sound wood in growing-stock and sawtimber trees that die annually.

National Forest land.--Federal land that has been legally designated as National forest or purchase units, and other land administered by the USDA Forest Service.

Net annual growth of growing stock.--The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber.--The annual change in the volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land and (b) productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

a. *Nonforest land without trees*.--Nonforest land with no live trees present.

b. *Nonforest land with trees*.--Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other removals.--Growing-stock trees removed but not utilized for products, or trees left standing but "removed" from the commercial forest land classification by land use change. Examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Ownership.--Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.--The amount of commercial forest land owned by one owner, regardless of the number of parcels.

Owner tenure.--The length of time a property has been held by the owner.

Physiographic class.--A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are:

Xeric sites.--Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Xeromesic sites.--Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. Example: dry oak ridge.

Mesic sites.--Deep, well-drained soils. Growth and species occurrence are limited only by climate.

Hydromesic sites.--Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent. Example: better drained bottomland hardwood sites.

Hydric sites.--Very wet sites where excess water seriously limits both growth and species occurrence. Example: frequently flooded river bottoms and spruce bogs.

Plant residues.--Wood and bark materials generated at manufacturing plants during production of other products.

Poletimber stands.--(See stand-size class.)

Poletimber trees.--Growing-stock trees of commercial species at least 5 inches d.b.h. but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land but withdrawn from timber utilization through statute, administration regulation, designation, or exclusive use for Christmas tree production, as indicated by annual shearing.

Productive-deferred.--Forest land sufficiently productive to qualify as commercial forest land but presently withdrawn from timber utilization because it is being considered for possible inclusion into the Wilderness system.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of extra cull volume in a tree is rotten.

Rough trees.--(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Roundwood products.--Logs, bolts, or other round sections (including chips from roundwood) cut from trees for industrial or consumer uses. (Note: Includes saw logs, veneer logs and bolts; cooperage logs and bolts; pulpwood, fuelwood; piling; poles; posts; hewn ties; mine timbers; and various other round, split, or hewn products.

Salvable dead trees.--Standing or down dead trees considered merchantable by regional standards.

Saplings.--Live trees 1 to 5 inches d.b.h.

Sapling-seedling stands.--(See stand-size class.)

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) for softwoods of 7 inches (9 inches for hardwoods) or other combinations of size and defect specified by regional standards.

Saw log portion.--That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber stands.--(See stand-size class.)

Sawtimber trees.--Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9 inches d.b.h. Hardwoods must be at least 11 inches d.b.h.

Sawtimber volume.--Net volume of the saw log portion of live sawtimber in board feet, International ¼-inch rule, from stump to a minimum 7 inches top diameter outside bark (d.o.b.) for softwoods and a minimum 9 inches top d.o.b. for hardwoods.

Seedlings.--Live trees less than 1 inch d.b.h. that are expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Short-log (rough tree).--Sawtimber-size trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.--An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.--A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class.--Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.--The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber, or seedlings and saplings.

a. *Sawtimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber and/or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

b. *Poletimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

c. *Sapling-seeding stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which

more than half of the stocking is saplings and/or seedlings.

d. *Nonstocked stands.*--Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.--Land either owned by States or leased to them, for 50 years more.

Stocking.--The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h.

Stands are grouped into the following stocking classes:

Overstocked stands.--Stands in which stocking of trees is 134.0 percent or more.

Fully-stocked stands.--Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium-stocked stands.--Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly-stocked stands.--Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.--Commercial forest land on which stocking of trees is less than 16.7 percent.

Timber removals from growing stock.--The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals.

Timber removals from sawtimber.--The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output.--All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree biomass.--The total aboveground weight (including the bark) of all trees from 1 to 5 inches in d.b.h., and the total aboveground weight (including the bark) from a 1-foot stump for trees more than 5 inches in diameter.

Tree size class.--A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural conditions because of adverse site conditions. (Note: Adverse conditions include shallow soil, dry climate, poor drainage, high elevation, steepness, and rockiness.)

Upper stem portion.--That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4 inches outside bark or to the point where the central stem breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards, cemeteries, roads; railroads; airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified land use class.

Water.--(a) *Bureau of the Census.*--Permanent inland water surfaces, such as lakes, reservoirs, and ponds at least 40 acres in area; and streams, sloughs, estuaries, and canals at least one-eighth of a statute mile wide.

(b) *Noncensus.*--Permanent inland water surfaces, such as lakes, reservoirs, and ponds from 1 to 39.9 acres in area; and streams, sloughs, estuaries, and canals from 120 feet to one-eighth of a statute mile wide.

Windbreak.--A group of trees less than 120 feet wide used for protecting soil, cropfields, and buildings.

Wooded pasture.--Improved pasture with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing.

Wooded strip.--An acre of more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide.

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(In thousand acres)

Land class	1955	1983
Forest land		
Commercial forest land		
Ponderosa pine	147.2	146.1
Eastern redcedar-hardwood	12.5	42.2
Oak-hickory	28.3	24.7
Bur oak	45.1	37.4
Elm-ash-cottonwood	109.5	122.0
Cottonwood	83.3	82.8
Lowland plains hardwoods	68.6	76.5
Nonstocked	220.2	6.1
Subtotal	714.7	537.8
Noncommercial forest land:		
Unproductive	174.8	162.3
Productive-reserved	13.8	18.2
Subtotal	188.6	180.5
Total	903.3	718.3
Nonforest land	48,161.0	48,333.8
All land	49,064.3[2/]	49,052.1[3/]

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1983 areas because of changes in survey definitions and procedures.

[2/] 1950, Bureau of Census.

[3/] 1980, Bureau of Census.

Table 6.--Area by land class and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Land class	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
FOREST LAND			
Commercial forest land	537.8	278.9	258.9
Noncommercial forest land			
Unproductive	162.3	92.7	69.6
Productive-reserved	18.2	10.3	7.9
Subtotal	180.5	103.0	77.5
Total	718.3	381.9	336.4
NONFOREST LAND			
Nonforest with trees			
Cropland	41.8	31.5	10.3
Improved pasture[1/]	582.5	221.6	360.9
Wooded strips[2/]	262.2	159.0	103.2
Marsh	7.8	2.3	5.5
Windbreaks[3/]	139.1	90.8	48.3
Wooded pasture[1/]	78.3	35.2	43.1
Subtotal	1,111.7	540.4	571.3
Nonforest without trees			
Cropland	25,484.6	16,515.8	8,968.8
Improved pasture[1/]	20,246.0	3,921.5	16,324.5
Idle farmland	3.5	--	3.5
Marsh	191.4	37.4	154.0
Other farm-farmstead	123.2	85.5	37.7
Urban and other	1,126.6	820.4	306.2
Noncensus water	46.8	30.1	16.7
Subtotal	47,222.1	21,410.7	25,811.4
Total	48,333.8	21,951.1	26,382.7
TOTAL LAND[4/]	49,052.1	22,333.0	26,719.1
WATER (BUREAU OF THE CENSUS)[4/]	455.1	204.3	250.8
TOTAL LAND AND WATER[4/]	49,507.2	22,537.3	26,969.9

[1/] Includes areas classified as range by the USDA Soil Conservation Service.

[2/] An acre or more of natural continuous forest land less than 120 feet wide that would otherwise meet survey standards.

[3/] A group of trees less than 120 feet wide used for the protection of soil, cropfields, and buildings in use.

[4/] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

Table 7.--Area of land by land class and county, Nebraska, 1983

EASTERN UNIT

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Acres				Percent	Acres			Percent
Adams	360,864	2,692	407	2,285	0.6	10,083	2,603	7,480	2.8
Boone	439,942	2,954	387	2,567	0.6	9,481	1,875	7,606	2.2
Buffalo	605,062	10,721	3,956	6,765	1.1	4,066	729	3,337	0.7
Burt	310,982	6,026	1,170	4,856	1.6	9,208	2,614	6,594	3.0
Butler	373,888	4,490	930	3,560	1.0	2,090	618	1,472	0.6
Cass	356,506	16,361	3,971	12,390	3.5	16,072	3,779	12,293	4.5
Cedar	473,626	7,915	2,122	5,793	1.2	16,541	4,849	11,692	3.5
Clay	367,309	2,038	360	1,678	0.5	3,482	913	2,569	0.9
Colfax	262,618	4,729	1,222	3,507	1.3	1,814	642	1,172	0.7
Cuming	367,725	6,437	964	5,473	1.5	7,143	2,045	5,098	1.9
Custer	1,645,619	18,822	5,806	13,016	0.8	49,788	14,241	35,547	3.0
Dakota	164,864	7,841	1,887	5,954	3.6	7,257	1,417	5,840	4.4
Dawson	628,429	13,840	7,669	6,171	1.0	8,760	3,307	5,453	1.4
Dixon	303,494	10,108	2,263	7,845	2.6	11,716	3,838	7,878	3.9
Dodge	341,779	8,294	2,248	6,046	1.8	14,104	3,738	10,366	4.1
Douglas	212,941	8,444	1,611	6,833	3.2	10,212	1,951	8,261	4.8
Fillmore	368,928	924	182	742	0.2	456	136	320	0.1
Franklin	368,704	4,090	603	3,487	0.9	14,169	3,786	10,383	3.8
Frontier	624,403	3,832	2,402	1,430	0.2	10,018	2,397	7,621	1.6
Furnas	461,389	5,237	1,908	3,329	0.7	5,614	1,880	3,734	1.2
Gage	549,139	9,218	1,502	7,716	1.4	34,820	11,382	23,438	6.3
Gosper	294,886	697	220	477	0.2	347	130	217	0.1
Greeley	365,062	528	205	323	0.1	3,667	1,316	2,351	1.0
Hall	343,533	5,271	1,573	3,698	1.1	5,793	1,869	3,924	1.7
Hamilton	347,264	2,876	916	1,960	0.6	2,309	420	1,889	0.7
Harlan	355,277	4,006	1,072	2,934	0.8	1,601	445	1,156	0.5
Hitchcock	453,702	4,227	1,459	2,768	0.6	7,257	2,172	5,085	1.6
Howard	361,075	5,523	1,580	3,943	1.1	19,210	6,581	12,629	5.3
Jefferson	367,693	13,721	2,946	10,775	2.9	12,887	3,441	9,446	3.5
Johnson	240,999	9,734	2,361	7,373	3.1	14,696	3,947	10,749	6.1
Kearney	331,910	224	72	152	--	120	24	96	--
Lancaster	536,973	6,803	1,966	4,837	0.9	25,488	9,561	15,927	4.7
Madison	368,224	3,152	858	2,294	0.6	7,780	2,652	5,128	2.1
Merrick	305,971	7,911	3,315	4,596	1.5	9,005	2,918	6,087	2.9
Nance	281,235	10,259	2,586	7,673	2.7	4,795	1,074	3,721	1.7
Nemaha	261,453	11,430	3,067	8,363	3.2	11,123	3,854	7,269	4.3
Nuckolls	368,429	5,475	1,381	4,094	1.1	6,034	1,678	4,356	1.6
Otoe	393,843	10,989	2,275	8,714	2.2	14,128	4,604	9,524	3.6
Pawnee	276,864	9,696	2,845	6,851	2.5	11,584	2,982	8,602	4.2
Phelps	345,530	532	71	461	0.1	302	66	236	0.1
Pierce	367,834	3,047	1,116	1,931	0.5	5,129	1,879	3,250	1.4
Platte	428,314	4,585	780	3,805	0.9	2,642	500	2,142	0.6
Polk	279,763	3,560	1,154	2,406	0.9	1,483	347	1,136	0.5
Red Willow	459,712	3,669	698	2,971	0.6	2,125	403	1,722	0.5
Richardson	353,734	13,450	3,599	9,851	2.8	8,636	2,681	5,955	2.4
Saline	368,307	7,371	1,794	5,577	1.5	6,876	1,890	4,986	1.9
Sarpy	152,422	8,573	1,885	6,688	4.4	14,493	4,764	9,729	9.5
Saunders	481,792	10,524	3,357	7,167	1.5	11,513	3,488	8,025	2.4

(Table 7 continued on next page)

[1/] U.S. Department of Commerce, Bureau of the Census. 1980.

(Table 7 continued)

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Acres				Percent	Acres			Percent
Seward	368,109	5,393	1,106	4,287	1.2	5,139	1,275	3,864	1.4
Sherman	360,640	3,603	1,486	2,117	0.6	19,471	6,594	12,877	5.4
Stanton	275,712	5,712	1,936	3,776	1.4	10,766	2,722	8,044	3.9
Thayer	368,026	5,147	1,527	3,620	1.0	2,427	561	1,866	0.7
Thurston	250,003	14,166	3,156	11,010	4.4	7,462	2,181	5,281	3.0
Valley	363,091	1,549	512	1,037	0.3	4,107	1,408	2,699	1.1
Washington	247,174	13,488	2,814	10,674	4.3	14,764	3,881	10,883	6.0
Wayne	283,622	1,787	302	1,485	0.5	3,836	1,365	2,471	1.4
Webster	368,141	7,023	1,113	5,910	1.6	10,411	3,007	7,404	2.8
York	368,486	1,182	284	898	0.2	4,122	1,598	2,524	1.1
Total	22,333,016	381,896	102,957	278,939	1.2	540,422	159,018	381,404	2.4
				WESTERN UNIT					
Antelope	549,459	12,917	3,028	9,889	1.8	17,253	2,290	14,963	3.1
Arthur	454,752	323	--	323	0.1	54	--	54	--
Banner	478,208	5,507	2,151	3,356	0.7	11,534	852	10,682	2.4
Blaine	457,235	1,399	268	1,131	0.2	3,077	356	2,721	0.7
Box Butte	689,280	84	--	84	--	112	56	56	--
Boyd	340,666	11,762	2,511	9,251	2.7	25,205	5,129	20,076	7.4
Brown	776,864	14,682	4,284	10,398	1.3	20,933	5,280	15,653	2.7
Chase	571,853	416	191	225	--	3,282	319	2,963	0.6
Cherry	3,815,309	17,322	4,724	12,598	0.3	32,993	3,705	29,288	0.9
Cheyenne	765,370	688	--	688	0.1	9,124	544	8,580	1.2
Dawes	894,266	56,465	8,401	48,064	5.4	70,313	16,844	53,469	7.9
Deuel	279,853	282	--	282	0.1	398	168	230	0.1
Dundy	588,941	1,635	93	1,542	0.3	4,590	575	4,015	0.8
Garden	1,075,392	823	75	748	0.1	6,991	660	6,331	0.7
Garfield	365,062	1,963	407	1,556	0.4	5,306	495	4,811	1.5
Grant	495,898	--	--	--	--	--	--	--	--
Hayes	456,518	1,096	176	920	0.2	3,821	869	2,952	0.8
Holt	1,539,731	27,163	6,702	20,461	1.3	68,004	12,882	55,122	4.4
Hooker	461,197	935	154	781	0.2	939	143	796	0.2
Keith	665,037	3,579	24	3,555	0.5	8,438	1,324	7,114	1.3
Keya Paha	491,898	22,449	6,484	15,965	3.2	32,982	9,831	23,151	6.7
Kimball	609,254	441	83	358	0.1	5,752	272	5,480	0.9
Knox	707,494	28,630	7,277	21,353	3.0	50,154	11,693	38,461	7.1
Lincoln	1,616,301	12,199	3,040	9,159	0.6	29,383	4,008	25,375	1.8
Logan	365,523	1,216	335	881	0.2	645	54	591	0.2
Loup	367,392	902	284	618	0.2	3,319	780	2,539	0.9
McPherson	549,984	301	51	250	--	263	28	235	--
Morrill	899,174	6,441	3,695	2,746	0.3	14,490	2,652	11,838	1.6
Perkins	566,150	--	--	--	--	--	--	--	--
Rock	642,106	5,671	1,366	4,305	0.7	8,715	1,183	7,532	1.4
Scotts Bluff	464,115	9,396	4,830	4,566	1.0	20,999	3,052	17,947	4.5
Sheridan	1,569,773	37,128	5,675	31,453	2.0	47,037	7,266	39,771	3.0
Sioux	1,324,518	44,921	8,934	35,987	2.7	38,496	6,464	32,032	2.9
Thomas	456,576	4,980	1,556	3,424	0.7	17,605	1,839	15,766	3.9
Wheeler	367,955	2,695	714	1,981	0.5	9,085	1,599	7,486	2.5
Total	26,719,104	336,411	77,513	258,898	1.0	571,292	103,212	468,080	2.1
All counties	49,052,120	718,307	180,470	537,837	1.1	1,111,714	262,230	849,484	2.3

[1/] U.S. Department of Commerce, Bureau of the Census. 1980.

Table 8.--Area of commercial forest land by ownership class and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Ownership class	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
National Forest	30.8	--	30.8
State	21.8	5.8	16.0
County and municipal	3.8	--	3.8
Indian	8.8	8.8	--
Farmer	381.0	205.7	175.3
Misc. private corporation	12.0	10.5	1.5
Misc. private individual	79.6	48.1	31.5
All owners	537.8	278.9	258.9

Table 9.--Area of commercial forest land by ownership class and forest type, Nebraska, 1983

(In thousand acres)

Ownership class	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocke
National Forest	30.8	30.8	--	--	--	--	--	--	--
State	21.8	7.7	4.9	--	--	3.4	5.8	--	--
County and municipal	3.8	--	--	--	--	3.8	--	--	--
Indian	8.8	--	--	3.5	--	--	2.8	2.5	--
Farmer	381.0	89.6	27.2	3.7	25.6	104.9	64.6	63.1	2.3
Misc. private corporation	12.0	--	1.5	3.4	3.7	--	3.4	--	--
Misc. private individual	79.6	18.0	8.6	14.1	8.1	9.9	6.2	10.9	3.8
All owners	537.8	146.1	42.2	24.7	37.4	122.0	82.8	76.5	6.1

Table 10.--Area of commercial forest land by ownership class and site class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth/acre/year)			
		119+	85-119	50-84	20-49
National Forest	30.8	2.7	16.0	9.0	3.1
State	21.8	--	7.7	--	14.1
County and municipal	3.8	--	--	--	3.8
Indian	8.8	--	--	3.5	5.3
Farmer	381.0	9.1	55.6	87.2	229.1
Misc. private corporation	12.0	--	--	3.4	8.6
Misc. private individual	79.6	--	5.9	23.1	50.6
All owners	537.8	11.8	85.2	126.2	314.6

Table 11.--Area of commercial forest land by ownership class and ownership size class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Ownership size class (acres)								
		1-5	5-10	10-20	20-50	50-100	100-500	500-2,500	2,500-5,000	5,000+
National Forest	30.8	--	--	--	--	--	--	--	--	30.8
State	21.8	--	--	--	--	--	--	--	--	21.8
County and municipal	3.8	--	--	--	--	--	--	--	3.8	--
Indian	8.8	--	--	--	--	--	--	--	--	8.8
Farmer	381.0	32.3	35.6	100.0	83.0	52.9	48.6	28.6	--	--
Misc. private corporation	12.0	--	--	--	7.1	--	4.9	--	--	--
Misc. private individual	79.6	12.7	6.2	13.6	9.2	17.6	16.9	--	3.4	--
All owners	537.8	45.0	41.8	113.6	99.3	70.5	70.4	28.6	7.2	61.4

Table 12.--Area of commercial forest land by ownership class, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Ownership class	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
National Forest	30.8	27.7	--	3.1	--
State	21.8	18.4	--	3.4	--
County and municipal	3.8	3.8	--	--	--
Indian	8.8	--	6.0	2.8	--
Farmer	381.0	261.0	57.5	60.2	2.3
Misc. private corporation	12.0	8.6	3.4	--	--
Misc. private individual	79.6	50.4	22.0	3.4	3.8
All owners	537.8	369.9	88.9	72.9	6.1
EASTERN UNIT					
National Forest	--	--	--	--	--
State	5.8	5.8	--	--	--
County and municipal	--	--	--	--	--
Indian	8.8	--	6.0	2.8	--
Farmer	205.7	128.7	28.4	48.6	--
Misc. private corporation	10.5	7.1	3.4	--	--
Misc. private individual	48.1	27.6	13.3	3.4	3.8
All owners	278.9	169.2	51.1	54.8	3.8
WESTERN UNIT					
National Forest	30.8	27.7	--	3.1	--
State	16.0	12.6	--	3.4	--
County and municipal	3.8	3.8	--	--	--
Indian	--	--	--	--	--
Farmer	175.3	132.3	29.1	11.6	2.3
Misc. private corporation	1.5	1.5	--	--	--
Misc. private individual	31.5	22.8	8.7	--	--
All owners	258.9	200.7	37.8	18.1	2.3

Table 13.--Area of commercial forest land by ownership class and area-condition class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Area-condition class			
		70	60	50	40 or better
National Forest	30.8	5.9	17.7	7.2	--
State	21.8	6.3	12.6	2.9	--
County and municipal	3.8	3.8	--	--	--
Indian	8.8	5.3	3.5	--	--
Farmer	381.0	149.1	185.3	46.6	--
Misc. private corporation	12.0	3.7	4.9	3.4	--
Misc. private individual	79.6	33.3	37.0	9.3	--
All owners	537.8	207.4	261.0	69.4	--

Table 14.--Area of commercial forest land by ownership class and stand-volume class, Nebraska, 1983

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1] per acre)		
		Less than 1,500	1,500 to 5,000	5,000+
National Forest	30.8	5.9	13.0	11.9
State	21.8	3.4	7.8	10.6
County and municipal	3.8	3.8	--	--
Indian	8.8	8.8	--	--
Farmer	381.0	146.2	181.4	53.4
Misc. private corporation	12.0	8.6	3.4	--
Misc. private individual	79.6	43.3	36.3	--
All owners	537.8	220.0	241.9	75.9

[1] International 1/4-inch rule.

Table 15.--Area of commercial forest land by county and forest type, Nebraska, 1983

(In acres)

EASTERN UNIT

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Adams	2,285	--	68	250	346	966	341	306	8
Boone	2,567	--	4	323	306	1,145	214	571	4
Buffalo	6,765	--	641	26	263	1,872	2,337	1,470	156
Burt	4,856	--	77	655	775	1,404	745	1,192	8
Butler	3,560	--	144	557	194	1,294	682	637	52
Cass	12,390	--	673	941	1,001	4,789	2,041	2,812	133
Cedar	5,793	--	74	192	1,104	1,805	328	2,274	16
Clay	1,678	--	40	303	211	611	360	149	4
Colfax	3,507	--	82	625	115	1,134	746	723	82
Cuming	5,473	--	362	574	416	2,108	1,027	950	36
Custer	13,016	--	357	724	647	5,151	1,680	4,273	184
Dakota	5,954	--	164	442	1,251	1,990	694	1,365	48
Dawson	6,171	--	453	260	138	975	1,982	2,264	99
Dixon	7,845	--	43	246	1,872	2,437	240	2,996	11
Dodge	6,046	--	544	73	316	2,428	1,334	1,244	107
Douglas	6,833	--	31	982	1,520	1,977	771	1,533	19
Fillmore	742	--	34	28	37	313	83	235	12
Franklin	3,487	--	70	378	476	1,362	393	796	12
Frontier	1,430	--	20	172	200	632	155	243	8
Furnas	3,329	--	282	146	161	1,081	791	811	57
Gage	7,716	--	30	900	1,250	2,933	632	1,963	8
Gosper	477	--	16	45	16	163	84	137	16
Greeley	323	--	12	--	12	115	36	136	12
Hall	3,698	--	396	--	153	1,062	1,419	617	51
Hamilton	1,960	--	94	225	53	595	530	427	36
Harlan	2,934	--	89	445	89	976	623	623	89
Hitchcock	2,768	--	50	460	313	1,084	430	415	16
Howard	3,943	--	125	510	125	1,327	783	948	125
Jefferson	10,775	--	318	865	895	4,385	1,173	3,043	96
Johnson	7,373	--	305	731	490	2,966	1,387	1,397	97
Kearney	152	--	8	--	8	56	24	48	8
Lancaster	4,837	--	249	585	293	2,005	861	777	67
Madison	2,294	--	66	355	66	762	482	497	66
Merrick	4,596	--	414	196	197	1,006	1,605	1,125	53
Nance	7,673	--	411	826	414	2,779	1,502	1,576	165
Nemaha	8,363	--	216	1,345	282	2,739	1,724	1,841	216
Nuckolls	4,094	--	361	233	253	1,443	983	770	51
Otoe	8,714	--	326	1,618	502	2,960	1,904	1,312	92
Pawnee	6,851	--	570	194	382	2,553	1,533	1,498	121
Phelps	461	--	22	--	153	143	33	110	--
Pierce	1,931	--	82	--	82	697	246	742	82
Platte	3,805	--	269	315	342	1,494	738	606	41
Polk	2,406	--	166	140	69	823	515	672	21
Red Willow	2,971	--	235	198	185	1,149	615	538	51
Richardson	9,851	--	291	1,530	291	3,267	2,097	2,084	291
Saline	5,577	--	325	597	380	2,111	988	1,093	83
Sarpy	6,688	--	91	416	1,753	1,877	552	1,972	27

(Table 15 continued on next page)

(Table 15 continued)

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Saunders	7,167	--	638	151	339	2,218	2,086	1,568	167
Seward	4,287	--	167	613	258	1,703	823	672	51
Sherman	2,117	--	138	173	97	633	601	435	40
Stanton	3,776	--	205	--	118	1,799	639	960	55
Thayer	3,620	--	151	270	151	1,268	676	953	151
Thurston	11,010	--	392	904	423	2,564	2,043	4,559	125
Valley	1,037	--	43	45	43	367	165	331	43
Washington	10,674	--	114	1,014	3,299	3,001	926	2,308	12
Wayne	1,485	--	--	303	303	396	234	249	--
Webster	5,910	--	304	560	429	2,373	913	1,259	72
York	898	--	62	28	59	356	149	216	28
Total	278,939	--	11,914	24,687	25,916	95,622	49,698	67,321	3,781
WESTERN UNIT									
Antelope	9,889	1,039	2,251	--	1,268	2,283	2,561	487	--
Arthur	323	--	54	--	--	108	161	--	--
Banner	3,356	3,149	--	--	--	--	--	--	207
Blaine	1,131	60	336	--	188	101	399	47	--
Box Butte	84	--	--	--	--	28	56	--	--
Boyd	9,251	2,309	1,750	--	607	1,577	2,443	565	--
Brown	10,398	3,609	2,322	--	993	901	1,459	1,114	--
Chase	225	--	59	--	--	54	112	--	--
Cherry	12,598	5,606	1,592	--	1,027	1,434	2,125	759	55
Cheyenne	688	--	--	--	--	688	--	--	--
Dawes	48,064	45,270	454	--	43	1,059	1,155	--	83
Deuel	282	--	62	--	--	53	167	--	--
Dundy	1,542	75	335	--	63	399	616	54	--
Garden	748	275	184	--	--	54	235	--	--
Garfield	1,556	450	313	--	144	165	427	57	--
Grant	--	--	--	--	--	--	--	--	--
Hayes	920	320	83	--	20	181	279	37	--
Holt	20,461	4,289	4,275	--	1,915	4,191	4,257	1,534	--
Hooker	781	105	180	--	84	120	172	120	--
Keith	3,555	--	735	--	21	1,323	1,476	--	--
Keya Paha	15,965	6,367	2,940	--	1,623	1,697	2,230	1,108	--
Kimball	358	358	--	--	--	--	--	--	--
Knox	21,353	4,010	5,892	--	2,110	2,813	4,675	1,853	--
Lincoln	9,159	500	2,261	--	--	3,140	2,758	500	--
Logan	881	235	254	--	81	84	67	160	--
Loup	618	30	146	--	83	91	231	37	--
McPherson	250	75	42	--	21	28	56	28	--
Morrill	2,746	--	506	--	--	470	940	--	830
Perkins	--	--	--	--	--	--	--	--	--
Rock	4,305	1,019	976	--	494	593	843	380	--
Scotts Bluff	4,566	--	824	--	--	1,438	1,192	--	1,112
Sheridan	31,453	29,929	262	--	124	407	667	64	--
Sioux	35,987	34,063	361	--	188	703	456	216	--
Thomas	3,424	2,769	217	--	103	63	182	63	27
Wheeler	1,981	175	593	--	293	181	702	37	--
Total	258,898	146,086	30,259	--	11,493	26,427	33,099	9,220	2,314
All Units	537,837	146,086	42,173	24,687	37,409	122,049	82,797	76,541	6,095

Table 16.--Area of commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	146.1	--	--	3.1	3.1	9.8	6.5	20.1	18.3	14.1	28.6	22.9	10.5	9.1
Eastern redcedar-hardwood	42.2	3.4	--	3.3	2.3	--	7.4	3.8	7.3	9.9	1.5	3.3	--	--
Oak-hickory	24.7	--	3.4	--	3.5	10.6	7.2	--	--	--	--	--	--	--
Bur oak	37.4	--	--	--	4.9	3.7	2.6	6.5	6.5	3.3	6.2	3.7	--	--
Elm-ash-cottonwood	122.0	20.2	6.0	7.5	6.6	12.8	6.8	17.1	15.5	16.8	7.2	2.6	2.9	--
Cottonwood	82.8	--	7.7	8.4	--	6.1	9.6	22.8	16.9	2.9	8.4	--	--	--
Lowland plains hardwoods	76.5	10.0	18.3	--	9.0	5.4	11.6	5.9	2.9	6.8	3.7	--	2.9	--
Nonstocked	6.1	--	--	--	--	2.3	--	--	3.8	--	--	--	--	--
All types	537.8	33.6	35.4	22.3	29.4	50.7	51.7	76.2	71.2	53.8	55.6	32.5	16.3	9.1

Table 17.--Area of commercial forest land by forest type, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Ponderosa pine	146.1	129.7	13.3	3.1	--
Eastern redcedar-hardwood	42.2	24.5	11.0	6.7	--
Oak-hickory	24.7	7.2	14.1	3.4	--
Bur oak	37.4	22.3	15.1	--	--
Elm-ash-cottonwood	122.0	85.8	12.5	23.7	--
Cottonwood	82.8	69.0	6.1	7.7	--
Lowland plains hardwoods	76.5	31.4	16.8	28.3	--
Nonstocked	6.1	--	--	--	6.1
All types	537.8	369.9	88.9	72.9	6.1
EASTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	11.9	5.8	6.1	--	--
Oak-hickory	24.7	7.2	14.1	3.4	--
Bur oak	25.9	15.7	10.2	--	--
Elm-ash-cottonwood	95.6	66.1	9.2	20.3	--
Cottonwood	49.7	46.9	--	2.8	--
Lowland plains hardwoods	67.3	27.5	11.5	28.3	--
Nonstocked	3.8	--	--	--	3.8
All types	278.9	169.2	51.1	54.8	3.8
WESTERN UNIT					
Ponderosa pine	146.1	129.7	13.3	3.1	--
Eastern redcedar-hardwood	30.3	18.7	4.9	6.7	--
Oak-hickory	--	--	--	--	--
Bur oak	11.5	6.6	4.9	--	--
Elm-ash-cottonwood	26.4	19.7	3.3	3.4	--
Cottonwood	33.1	22.1	6.1	4.9	--
Lowland plains hardwoods	9.2	3.9	5.3	--	--
Nonstocked	2.3	--	--	--	2.3
All types	258.9	200.7	37.8	18.1	2.3

Table 18.--Area of commercial forest land by forest type, stand-size class, and site class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth/acre/year)			
		120+	85-119	50-84	20-49
Ponderosa pine					
Sawtimber	129.7	11.8	69.8	37.4	10.7
Poletimber	13.3	--	3.1	4.0	6.2
Sapling & seedling	3.1	--	--	3.1	--
All stands	146.1	11.8	72.9	44.5	16.9
Eastern redcedar-hardwood					
Sawtimber	24.5	--	--	--	24.5
Poletimber	11.0	--	--	--	11.0
Sapling & seedling	6.7	--	--	3.3	3.4
All stands	42.2	--	--	3.3	38.9
Oak-hickory					
Sawtimber	7.2	--	--	7.2	--
Poletimber	14.1	--	--	14.1	--
Sapling & seedling	3.4	--	--	--	3.4
All stands	24.7	--	--	21.3	3.4
Bur oak					
Sawtimber	22.3	--	--	3.3	19.0
Poletimber	15.1	--	4.9	--	10.2
Sapling & seedling	--	--	--	--	--
All stands	37.4	--	4.9	3.3	29.2
Elm-ash-cottonwood					
Sawtimber	85.8	--	3.7	13.2	68.9
Poletimber	12.5	--	--	3.7	8.8
Sapling & seedling	23.7	--	--	--	23.7
All stands	122.0	--	3.7	16.9	101.4
Cottonwood					
Sawtimber	69.0	--	--	11.4	57.6
Poletimber	6.1	--	--	--	6.1
Sapling & seedling	7.7	--	--	--	7.7
All stands	82.8	--	--	11.4	71.4
Lowland plains hardwoods					
Sawtimber	31.4	--	3.7	11.7	16.0
Poletimber	16.8	--	--	6.4	10.4
Sapling & seedling	28.3	--	--	7.4	20.9
All stands	76.5	--	3.7	25.5	47.3
Nonstocked	6.1	--	--	--	6.1
All types					
Sawtimber	369.9	11.8	77.2	84.2	196.7
Poletimber	88.9	--	8.0	28.2	52.7
Sapling & seedling	72.9	--	--	13.8	59.1
Nonstocked	6.1	--	--	--	6.1
All stands	537.8	11.8	85.2	126.2	314.6

Table 19.--Area of commercial forest land by forest type, stand-size class, and stocking percent, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Stocking percent of growing-stock trees				
		Less than 16.7	16.7-60	61-100	101-133	134+
Ponderosa pine						
Sawtimber	129.7	--	36.8	72.9	20.0	--
Poletimber	13.3	--	7.1	6.2	--	--
Sapling & seedling	3.1	--	--	--	3.1	--
All stands	146.1	--	43.9	79.1	23.1	--
Eastern redcedar-hardwood						
Sawtimber	24.5	--	10.2	14.3	--	--
Poletimber	11.0	--	7.2	3.8	--	--
Sapling & seedling	6.7	--	6.7	--	--	--
All stands	42.2	--	24.1	18.1	--	--
Oak-hickory						
Sawtimber	7.2	--	--	3.7	3.5	--
Poletimber	14.1	--	--	10.7	3.4	--
Sapling & seedling	3.4	--	3.4	--	--	--
All stands	24.7	--	3.4	14.4	6.9	--
Bur oak						
Sawtimber	22.3	--	12.5	9.8	--	--
Poletimber	15.1	--	--	15.1	--	--
Sapling & seedling	--	--	--	--	--	--
All stands	37.4	--	12.5	24.9	--	--
Elm-ash-cottonwood						
Sawtimber	85.8	--	47.7	28.6	9.5	--
Poletimber	12.5	--	5.9	6.6	--	--
Sapling & seedling	23.7	--	17.4	3.4	2.9	--
All stands	122.0	--	71.0	38.6	12.4	--
Cottonwood						
Sawtimber	69.0	--	12.7	38.1	12.4	5.8
Poletimber	6.1	--	3.7	2.4	--	--
Sapling & seedling	7.7	--	2.8	4.9	--	--
All stands	82.8	--	19.2	45.4	12.4	5.8
Lowland plains hardwoods						
Sawtimber	31.4	--	7.6	22.2	1.6	--
Poletimber	16.8	--	10.0	6.8	--	--
Sapling & seedling	28.3	--	15.6	12.7	--	--
All stands	76.5	--	33.2	41.7	1.6	--
Nonstocked	6.1	6.1	--	--	--	--
All types						
Sawtimber	369.9	--	127.5	189.6	47.0	5.8
Poletimber	88.9	--	33.9	51.6	3.4	--
Sapling & seedling	72.9	--	45.9	21.0	6.0	--
Nonstocked	6.1	6.1	--	--	--	--
All stands	537.8	6.1	207.3	262.2	56.4	5.8

Table 20.--Area of commercial forest land by forest type, site-index class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
ALL UNITS									
Ponderosa pine	146.1	--	3.1	28.8	29.5	64.5	14.4	5.8	--
Eastern redcedar-hardwood	42.2	10.2	11.8	6.7	10.2	3.3	--	--	--
Oak-hickory	24.7	--	--	--	10.3	14.4	--	--	--
Bur oak	37.4	--	15.5	7.2	6.5	--	8.2	--	--
Elm-ash-cottonwood	122.0	--	22.3	40.1	28.0	13.9	14.0	--	3.7
Cottonwood	82.8	--	14.6	20.3	24.1	18.6	5.2	--	--
Lowland plains hardwoods	76.5	--	11.5	19.0	16.8	14.0	15.2	--	--
Nonstocked	6.1	--	2.3	3.8	--	--	--	--	--
All types	537.8	10.2	81.1	125.9	125.4	128.7	57.0	5.8	3.7
EASTERN UNIT									
Ponderosa pine	--	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	11.9	3.8	2.9	--	5.2	--	--	--	--
Oak-hickory	24.7	--	--	--	10.3	14.4	--	--	--
Bur oak	25.9	--	15.5	3.9	6.5	--	--	--	--
Elm-ash-cottonwood	95.6	--	11.8	32.8	19.4	13.9	14.0	--	3.7
Cottonwood	49.7	--	7.3	15.4	15.5	6.3	5.2	--	--
Lowland plains hardwoods	67.3	--	11.5	13.7	13.5	14.0	14.6	--	--
Nonstocked	3.8	--	--	3.8	--	--	--	--	--
All types	278.9	3.8	49.0	69.6	70.4	48.6	33.8	--	3.7
WESTERN UNIT									
Ponderosa pine	146.1	--	3.1	28.8	29.5	64.5	14.4	5.8	--
Eastern redcedar-hardwood	30.3	6.4	8.9	6.7	5.0	3.3	--	--	--
Oak-hickory	--	--	--	--	--	--	--	--	--
Bur oak	11.5	--	--	3.3	--	--	8.2	--	--
Elm-ash-cottonwood	26.4	--	10.5	7.3	8.6	--	--	--	--
Cottonwood	33.1	--	7.3	4.9	8.6	12.3	--	--	--
Lowland plains hardwoods	9.2	--	--	5.3	3.3	--	0.6	--	--
Nonstocked	2.3	--	2.3	--	--	--	--	--	--
All types	258.9	6.4	32.1	56.3	55.0	80.1	23.2	5.8	--

Table 21.--Area of commercial forest land by forest type and basal-area class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151+
Ponderosa pine	146.1	--	5.0	6.2	2.8	3.1	26.6	27.6	19.5	23.4	4.0	24.6	3.3	--
Eastern redcedar-hardwood	42.2	--	1.5	3.4	--	8.2	6.9	8.7	5.6	7.9	--	--	--	--
Oak-hickory	24.7	--	--	--	--	3.4	--	--	7.1	7.0	7.2	--	--	--
Bur oak	37.4	--	--	--	--	3.3	3.7	12.7	7.5	10.2	--	--	--	--
Elm-ash-cottonwood	122.0	3.4	6.8	3.8	13.5	20.1	8.8	5.8	13.5	10.8	6.3	15.4	13.8	--
Cottonwood	82.8	--	2.8	--	2.9	--	17.0	3.8	12.0	10.5	7.3	15.8	4.9	5.8
Lowland plains hardwoods	76.5	--	4.8	3.4	3.8	13.8	10.1	12.7	1.6	2.5	3.4	18.8	1.0	0.6
Nonstocked	6.1	--	2.3	--	--	3.8	--	--	--	--	--	--	--	--
All types	537.8	3.4	23.2	16.8	23.0	55.7	73.1	71.3	66.8	72.3	28.2	74.6	23.0	6.4

Table 22.--Area of commercial forest land by forest type and distance to road[1/], Nebraska, 1983

(In thousand acres)

Forest type	All distances	Distance to road (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Ponderosa pine	146.1	17.7	17.1	91.5	19.8	--	--	--	--
Eastern redcedar-hardwood	42.2	7.9	13.8	15.7	4.8	--	--	--	--
Oak-hickory	24.7	10.3	7.3	7.1	--	--	--	--	--
Bur oak	37.4	--	5.5	23.3	3.7	4.9	--	--	--
Elm-ash-cottonwood	122.0	33.5	39.2	45.9	3.4	--	--	--	--
Cottonwood	82.8	13.3	11.0	44.3	14.2	--	--	--	--
Lowland plains hardwoods	76.5	34.8	13.6	28.1	--	--	--	--	--
Nonstocked	6.1	--	--	6.1	--	--	--	--	--
All types	537.8	117.5	107.5	262.0	45.9	4.9	--	--	--

[1/] A permanent road that is maintained at least once a year.

Table 23.--Area of commercial forest land by forest type and distance to water[1/], Nebraska, 1983

(In thousand acres)

Forest type	All distances	Distance to water (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Ponderosa pine	146.1	3.8	3.8	7.7	10.5	3.4	3.1	--	113.8
Eastern redcedar-hardwood	42.2	3.3	5.2	9.8	10.0	5.0	--	8.9	--
Oak-hickory	24.7	--	--	10.4	7.2	--	7.1	--	--
Bur oak	37.4	--	8.2	7.6	8.9	7.2	5.5	--	--
Elm-ash-cottonwood	122.0	22.1	10.3	22.6	15.2	18.1	9.7	6.3	17.7
Cottonwood	82.8	34.5	17.7	11.1	6.0	--	--	6.2	7.3
Lowland plains hardwoods	76.5	3.4	10.2	15.7	24.6	7.1	--	15.5	--
Nonstocked	6.1	--	3.8	2.3	--	--	--	--	--
All types	537.8	67.1	59.2	87.2	82.4	40.8	25.4	36.9	138.8

[1/] Lakes or ponds 5 acres or larger in area, and streams or rivers at least 66 feet in width.

Table 24.--Area of commercial forest land by forest type and stand-area class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-area class (acres)								
		1-4	5-9	10-19	20-39	40-79	80-159	160-319	320-639	640+
Ponderosa pine	146.1	88.1	27.0	31.0	--	--	--	--	--	--
Eastern redcedar-hardwood	42.2	10.4	15.5	3.3	--	--	8.1	4.9	--	--
Oak-hickory	24.7	--	3.4	10.5	--	3.8	3.5	--	--	3.5
Bur oak	37.4	4.9	7.0	14.0	7.6	--	3.9	--	--	--
Elm-ash-cottonwood	122.0	36.6	51.1	24.8	2.9	2.9	3.7	--	--	--
Cottonwood	82.8	20.9	12.2	5.2	10.0	8.9	13.6	6.1	5.9	--
Lowland plains hardwoods	76.5	20.9	8.1	40.2	3.8	--	--	2.5	--	1.0
Nonstocked	6.1	--	--	6.1	--	--	--	--	--	--
All types	537.8	181.8	124.3	135.1	24.3	15.6	32.8	13.5	5.9	4.5

Table 25.--Area of commercial forest land by stocking class based on selected stand components, Nebraska, 1983

(In thousand acres)

Stocking percentage	Stocking classified in terms of		
	All live trees	Growing-stock trees	Rough and rotten trees
0-10	--	--	198.3
11-20	--	6.1	124.7
21-30	2.3	19.4	82.0
31-40	20.4	56.0	64.5
41-50	10.8	59.1	39.6
51-60	50.6	66.8	20.7
61-70	47.5	68.8	5.5
71-80	58.4	69.1	--
81-90	65.1	75.2	2.5
91-100	81.1	47.9	--
101-110	77.1	31.3	--
111-120	72.8	21.0	--
121-130	26.2	11.3	--
131-140	17.1	--	--
141-150	5.5	5.8	--
151-160	2.9	--	--
161+	--	--	--
Total	537.8	537.8	537.8

Table 26.--Area of commercial forest land by forest type, physiographic class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and physiographic class	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Xeric	14.7	--	--	--	--	14.7	--	--
Xeromesic	111.5	30.8	--	--	--	65.8	--	14.9
Mesic	19.9	--	7.7	--	--	9.1	--	3.1
Hydromesic	--	--	--	--	--	--	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	146.1	30.8	7.7	--	--	89.6	--	18.0
Eastern redcedar-hardwood								
Xeric	8.2	--	--	--	--	8.2	--	--
Xeromesic	10.7	--	--	--	--	6.7	1.5	2.5
Mesic	12.3	--	--	--	--	12.3	--	--
Hydromesic	11.0	--	4.9	--	--	--	--	6.1
Hydric	--	--	--	--	--	--	--	--
All classes	42.2	--	4.9	--	--	27.2	1.5	8.6
Oak-hickory								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	24.7	--	--	--	3.5	3.7	3.4	14.1
Hydromesic	--	--	--	--	--	--	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	24.7	--	--	--	3.5	3.7	3.4	14.1
Bur oak								
Xeric	4.9	--	--	--	--	4.9	--	--
Xeromesic	10.1	--	--	--	--	7.2	--	2.9
Mesic	18.5	--	--	--	--	9.6	3.7	5.2
Hydromesic	3.9	--	--	--	--	3.9	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	37.4	--	--	--	--	25.6	3.7	8.1
Elm-ash-cottonwood								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	3.4	--	--	--	--	3.4	--	--
Mesic	60.3	--	3.4	--	--	56.9	--	--
Hydromesic	54.9	--	--	3.8	--	41.2	--	9.9
Hydric	3.4	--	--	--	--	3.4	--	--
All classes	122.0	--	3.4	3.8	--	104.9	--	9.9
Cottonwood								
Xeric	3.8	--	--	--	--	3.8	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	32.4	--	2.9	--	--	25.7	--	3.8
Hydromesic	43.2	--	2.9	--	2.8	35.1	--	2.4
Hydric	3.4	--	--	--	--	--	3.4	--
All classes	82.8	--	5.8	--	2.8	64.6	3.4	6.2
Lowland plains hardwoods								
Xeric	--	--	--	--	--	--	--	--
Xeromesic	8.3	--	--	--	--	3.4	--	4.9
Mesic	60.0	--	--	--	2.5	51.5	--	6.0
Hydromesic	8.2	--	--	--	--	8.2	--	--
Hydric	--	--	--	--	--	--	--	--
All classes	76.5	--	--	--	2.5	63.1	--	10.9
Nonstocked								
Xeric	2.3	--	--	--	--	2.3	--	--
Xeromesic	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--
Hydromesic	3.8	--	--	--	--	--	--	3.8
Hydric	--	--	--	--	--	--	--	--
All classes	6.1	--	--	--	--	2.3	--	3.8
All types								
Xeric	33.9	--	--	--	--	33.9	--	--
Xeromesic	144.0	30.8	--	--	--	86.5	1.5	25.2
Mesic	228.1	--	14.0	--	6.0	168.8	7.1	32.2
Hydromesic	125.0	--	7.8	3.8	2.8	88.4	--	22.2
Hydric	6.8	--	--	--	--	3.4	3.4	--
All classes	537.8	30.8	21.8	3.8	8.8	381.0	12.0	79.6

Table 27.--Area of noncommercial forest land by ownership class, Nebraska, 1983

(In thousand acres)

Ownership class	Total	Unproductive	Productive-reserved
National Forest	3.1	3.1	--
Miscellaneous federal	5.1	3.8	1.3
State	28.3	11.8	16.5
County and municipal	0.4	--	0.4
Indian	3.5	3.5	--
Farmer	104.7	104.7	--
Misc. private corporation	8.4	8.4	--
Misc. private individual	27.0	27.0	--
All owners	180.5	162.3	18.2

Table 28.--Area of noncommercial forest land by forest type and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	Total	Unproductive	Productive-reserved
ALL UNITS			
Ponderosa pine	29.5	24.7	4.8
Eastern redcedar-hardwood	32.7	30.4	2.3
Oak-hickory	3.3	3.3	--
Bur oak	25.8	25.8	--
Elm-ash-cottonwood	31.6	28.7	2.9
Cottonwood	46.8	38.6	8.2
Lowland plains hardwoods	10.8	10.8	--
Nonstocked	--	--	--
All types	180.5	162.3	18.2
EASTERN UNIT			
Ponderosa pine	--	--	--
Eastern redcedar-hardwood	22.3	22.3	--
Oak-hickory	--	--	--
Bur oak	3.5	3.5	--
Elm-ash-cottonwood	26.7	24.6	2.1
Cottonwood	39.7	31.5	8.2
Lowland plains hardwoods	10.8	10.8	--
Nonstocked	--	--	--
All types	103.0	92.7	10.3
WESTERN UNIT			
Ponderosa pine	29.5	24.7	4.8
Eastern redcedar-hardwood	10.4	8.1	2.3
Oak-hickory	3.3	3.3	--
Bur oak	22.3	22.3	--
Elm-ash-cottonwood	4.9	4.1	0.8
Cottonwood	7.1	7.1	--
Lowland plains hardwoods	--	--	--
Nonstocked	--	--	--
All types	77.5	69.6	7.9

Table 29.--Area of nonforest land with trees by land use, forest type, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Land use	All types	Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
				ALL UNITS					
		Forest type							
Cropland	41.8	--	--	3.5	--	34.9	3.4	--	--
Improved pasture	582.5	161.3	79.4	6.8	13.9	215.0	78.7	10.2	17.2
Wooded strips	262.2	25.3	13.2	10.2	20.5	113.9	68.9	10.2	--
Marsh	7.8	--	--	--	--	7.8	--	--	--
Windbreaks	139.1	--	21.3	6.9	--	82.1	25.3	3.5	--
Wooded pasture	78.3	6.2	--	3.8	16.0	10.5	18.9	5.3	17.6
All uses	1,111.7	192.8	113.9	31.2	50.4	464.2	195.2	29.2	34.8
				EASTERN UNIT					
Cropland	31.5	--	--	--	--	31.5	--	--	--
Improved pasture	221.6	--	38.7	3.4	--	135.2	34.1	10.2	--
Wooded strips	159.0	--	9.8	3.4	6.8	89.2	43.0	6.8	--
Marsh	2.3	--	--	--	--	2.3	--	--	--
Windbreaks	90.8	--	12.8	6.9	--	57.6	13.5	--	--
Wooded pasture	35.2	--	--	3.8	9.3	10.5	2.9	2.9	5.8
All uses	540.4	--	61.3	17.5	16.1	326.3	93.5	19.9	5.8
				WESTERN UNIT					
Cropland	10.3	--	--	3.5	--	3.4	3.4	--	--
Improved pasture	360.9	161.3	40.7	3.4	13.9	79.8	44.6	--	17.2
Wooded strips	103.2	25.3	3.4	6.8	13.7	24.7	25.9	3.4	--
Marsh	5.5	--	--	--	--	5.5	--	--	--
Windbreaks	48.3	--	8.5	--	--	24.5	11.8	3.5	--
Wooded pasture	43.1	6.2	--	--	6.7	--	16.0	2.4	11.8
All uses	571.3	192.8	52.6	13.7	34.3	137.9	101.7	9.3	29.0

Table 30.--Area of nonforest land with trees by forest type and stand-size class, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
		Stand-size class			
Ponderosa pine	192.8	93.4	72.8	26.6	--
Eastern redcedar-hardwood	113.9	6.6	45.7	61.6	--
Oak-hickory	31.2	6.9	13.7	10.6	--
Bur oak	50.4	20.2	24.2	6.0	--
Elm-ash-cottonwood	464.2	149.6	240.8	73.8	--
Cottonwood	195.2	121.7	63.3	10.2	--
Lowland plains hardwoods	29.2	13.6	10.3	5.3	--
Nonstocked	34.8	--	--	--	34.8
All types	1,111.7	412.0	470.8	194.1	34.8

Table 31.--Area of windbreaks by forest type, stand-size class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	21.3	--	12.9	8.4	--
Oak-hickory	6.9	3.4	3.5	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	82.1	23.6	44.6	13.9	--
Cottonwood	25.3	18.5	6.8	--	--
Lowland plains hardwoods	3.5	--	3.5	--	--
Nonstocked	--	--	--	--	--
All types	139.1	45.5	71.3	22.3	--
EASTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	12.8	--	9.4	3.4	--
Oak-hickory	6.9	3.4	3.5	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	57.6	20.2	30.6	6.8	--
Cottonwood	13.5	10.1	3.4	--	--
Lowland plains hardwoods	--	--	--	--	--
Nonstocked	--	--	--	--	--
All types	90.8	33.7	46.9	10.2	--
WESTERN UNIT					
Ponderosa pine	--	--	--	--	--
Eastern redcedar-hardwood	8.5	--	3.5	5.0	--
Oak-hickory	--	--	--	--	--
Bur oak	--	--	--	--	--
Elm-ash-cottonwood	24.5	3.4	14.0	7.1	--
Cottonwood	11.8	8.4	3.4	--	--
Lowland plains hardwoods	3.5	--	3.5	--	--
Nonstocked	--	--	--	--	--
All types	48.3	11.8	24.4	12.1	--

Table 32.--Area of wooded strips by forest type, stand-size class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Sawtimber	15.3	--	--	--	--	15.3	--	--
Poletimber	10.0	3.6	--	--	--	6.4	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	25.3	3.6	--	--	--	21.7	--	--
Eastern redcedar-hardwood								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	13.2	--	--	--	--	13.2	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	13.2	--	--	--	--	13.2	--	--
Oak-hickory								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	6.8	--	--	--	--	6.8	--	--
Sapling & seedling	3.4	--	--	--	--	--	--	3.4
All stands	10.2	--	--	--	--	6.8	--	3.4
Bur oak								
Sawtimber	6.8	--	3.4	--	--	3.4	--	--
Poletimber	13.7	--	--	--	--	13.7	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	20.5	--	3.4	--	--	17.1	--	--
Elm-ash-cottonwood								
Sawtimber	34.4	--	--	--	--	34.4	--	--
Poletimber	69.2	--	--	--	--	69.2	--	--
Sapling & seedling	10.3	--	--	--	--	10.3	--	--
All stands	113.9	--	--	--	--	113.9	--	--
Cottonwood								
Sawtimber	33.2	--	--	--	--	30.3	--	2.9
Poletimber	32.3	--	--	--	--	28.8	--	3.5
Sapling & seedling	3.4	--	--	--	--	3.4	--	--
All stands	68.9	--	--	--	--	62.5	--	6.4
Lowland plains hardwoods								
Sawtimber	3.4	--	--	--	--	3.4	--	--
Poletimber	6.8	--	--	--	--	3.4	--	3.4
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	10.2	--	--	--	--	6.8	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All types								
Sawtimber	93.1	--	3.4	--	--	86.8	--	2.9
Poletimber	152.0	3.6	--	--	--	141.5	--	6.9
Sapling & seedling	17.1	--	--	--	--	13.7	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All stands	262.2	3.6	3.4	--	--	242.0	--	13.2

Table 33.--Area of wooded strips by forest type and site-index class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Ponderosa pine	25.3	--	--	--	2.7	17.4	5.2	--	--
Eastern redcedar-hardwood	13.2	--	13.2	--	--	--	--	--	--
Oak-hickory	10.2	--	--	--	3.4	6.8	--	--	--
Bur oak	20.5	--	3.4	3.4	13.7	--	--	--	--
Elm-ash-cottonwood	113.9	--	3.4	30.8	58.5	7.6	13.6	--	--
Cottonwood	68.9	--	--	13.6	27.6	24.8	2.9	--	--
Lowland plains hardwoods	10.2	--	--	--	--	3.4	6.8	--	--
Nonstocked	--	--	--	--	--	--	--	--	--
All types	262.2	--	20.0	47.8	105.9	60.0	28.5	--	--

Table 34.--Area of wooded strips by forest type, basal-area class, and Forest Survey Unit, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101+
ALL UNITS												
Ponderosa pine	25.3	--	6.3	4.1	--	5.2	3.6	6.1	--	--	--	--
Eastern redcedar-hardwood	13.2	--	6.8	--	3.5	--	2.9	--	--	--	--	--
Oak-hickory	10.2	--	6.8	--	--	3.4	--	--	--	--	--	--
Bur oak	20.5	6.8	--	10.3	--	--	3.4	--	--	--	--	--
Elm-ash-cottonwood	113.9	17.1	24.2	17.3	9.5	14.4	14.4	3.4	6.8	3.4	3.4	--
Cottonwood	68.9	17.0	25.6	6.8	7.1	--	6.1	--	3.4	--	--	2.9
Lowland plains hardwoods	10.2	--	3.4	3.4	--	--	--	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	262.2	40.9	73.1	41.9	20.1	23.0	30.4	9.5	10.2	6.8	3.4	2.9
EASTERN UNIT												
Ponderosa pine	--	--	--	--	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	9.8	--	3.4	--	3.5	--	2.9	--	--	--	--	--
Oak-hickory	3.4	--	3.4	--	--	--	--	--	--	--	--	--
Bur oak	6.8	--	--	3.4	--	--	3.4	--	--	--	--	--
Elm-ash-cottonwood	89.2	13.6	20.8	10.2	6.0	14.4	7.2	3.4	6.8	3.4	3.4	--
Cottonwood	43.0	13.6	10.2	3.4	3.4	--	6.1	--	3.4	--	--	2.9
Lowland plains hardwoods	6.8	--	3.4	--	--	--	--	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	159.0	27.2	41.2	17.0	12.9	14.4	19.6	3.4	10.2	6.8	3.4	2.9
WESTERN UNIT												
Ponderosa pine	25.3	--	6.3	4.1	--	5.2	3.6	6.1	--	--	--	--
Eastern redcedar-hardwood	3.4	--	3.4	--	--	--	--	--	--	--	--	--
Oak-hickory	6.8	--	3.4	--	--	3.4	--	--	--	--	--	--
Bur oak	13.7	6.8	--	6.9	--	--	--	--	--	--	--	--
Elm-ash-cottonwood	24.7	3.5	3.4	7.1	3.5	--	7.2	--	--	--	--	--
Cottonwood	25.9	3.4	15.4	3.4	3.7	--	--	--	--	--	--	--
Lowland plains hardwoods	3.4	--	--	3.4	--	--	--	--	--	--	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--	--	--
All types	103.2	13.7	31.9	24.9	7.2	8.6	10.8	6.1	--	--	--	--

Table 35.--Area of wooded strips by forest type and stand-age class, Nebraska, 1983

(In thousand acres)

Forest type	All classes	Stand-age class (years) 21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101+
Ponderosa pine	25.3	--	--	--	--	10.0	--	--	11.2	4.1
Eastern redcedar-hardwood	13.2	--	3.4	--	3.5	--	2.9	3.4	--	--
Oak-hickory	10.2	--	3.4	6.8	--	--	--	--	--	--
Bur oak	20.5	--	--	--	--	3.4	13.7	--	--	3.4
Elm-ash-cottonwood	113.9	10.3	17.5	34.6	12.8	14.1	3.4	13.6	7.6	--
Cottonwood	68.9	--	--	13.6	13.7	21.5	16.7	3.4	--	--
Lowland plains hardwoods	10.2	--	3.4	--	3.4	--	--	3.4	--	--
Nonstocked	--	--	--	--	--	--	--	--	--	--
All types	262.2	10.3	27.7	55.0	33.4	49.0	36.7	23.8	18.8	7.5

Table 36.--Area of wooded strips by forest type, stand-size class, and ownership class, Nebraska, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Ponderosa pine								
Sawtimber	15.3	--	--	--	--	15.3	--	--
Poletimber	10.0	3.6	--	--	--	6.4	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	25.3	3.6	--	--	--	21.7	--	--
Eastern redcedar-hardwood								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	13.2	--	--	--	--	13.2	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	13.2	--	--	--	--	13.2	--	--
Oak-hickory								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	6.8	--	--	--	--	6.8	--	--
Sapling & seedling	3.4	--	--	--	--	--	--	3.4
All stands	10.2	--	--	--	--	6.8	--	3.4
Bur oak								
Sawtimber	6.8	--	3.4	--	--	3.4	--	--
Poletimber	13.7	--	--	--	--	13.7	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	20.5	--	3.4	--	--	17.1	--	--
Elm-ash-cottonwood								
Sawtimber	34.4	--	--	--	--	34.4	--	--
Poletimber	69.2	--	--	--	--	69.2	--	--
Sapling & seedling	10.3	--	--	--	--	10.3	--	--
All stands	113.9	--	--	--	--	113.9	--	--
Cottonwood								
Sawtimber	33.2	--	--	--	--	30.3	--	2.9
Poletimber	32.3	--	--	--	--	28.8	--	3.5
Sapling & seedling	3.4	--	--	--	--	3.4	--	--
All stands	68.9	--	--	--	--	62.5	--	6.4
Lowland plains hardwoods								
Sawtimber	3.4	--	--	--	--	3.4	--	--
Poletimber	6.8	--	--	--	--	3.4	--	3.4
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	10.2	--	--	--	--	6.8	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All types								
Sawtimber	93.1	--	3.4	--	--	86.8	--	2.9
Poletimber	152.0	3.6	--	--	--	141.5	--	6.9
Sapling & seedling	17.1	--	--	--	--	13.7	--	3.4
Nonstocked	--	--	--	--	--	--	--	--
All stands	262.2	3.6	3.4	--	--	242.0	--	13.2

Table 37.--Area of wooded strips in private ownership by ownership class, owner tenure, and size of holding, Nebraska, 1983

(In thousand acres)

Ownership class and owner tenure	All sizes	Size of holding (acres) 1-5	5-10	10-20	20-50	50+
ALL UNITS						
Farmer						
1-4 years	214.2	63.9	79.0	54.3	17.0	--
5-9 years	--	--	--	--	--	--
10-19 years	3.5	--	--	--	3.5	--
20+ years	24.3	7.2	5.3	--	11.8	--
Total	242.0	71.1	84.3	54.3	32.3	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	9.8	--	6.4	3.4	--	--
5-9 years	--	--	--	--	--	--
10-19 years	3.4	--	--	3.4	--	--
20+ years	--	--	--	--	--	--
Total	13.2	--	6.4	6.8	--	--
All owners						
1-4 years	224.0	63.9	85.4	57.7	17.0	--
5-9 years	--	--	--	--	--	--
10-19 years	6.9	--	--	3.4	3.5	--
20+ years	24.3	7.2	5.3	--	11.8	--
Total	255.2	71.1	90.7	61.1	32.3	--
EASTERN UNIT						
Farmer						
1-4 years	139.8	41.1	64.5	24.0	10.2	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	9.4	3.4	2.6	--	3.4	--
Total	149.2	44.5	67.1	24.0	13.6	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	9.8	--	6.4	3.4	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	9.8	--	6.4	3.4	--	--
All owners						
1-4 years	149.6	41.1	70.9	27.4	10.2	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	9.4	3.4	2.6	--	3.4	--
Total	159.0	44.5	73.5	27.4	13.6	--

(Table 37 continued on next page)

(Table 37 continued)

WESTERN UNIT

Ownership class and owner tenure	All sizes	Size of holding (acres) 1-5	5-10	10-20	20-50	50+
Farmer						
1-4 years	74.4	22.8	14.5	30.3	6.8	--
5-9 years	--	--	--	--	--	--
10-19 years	3.5	--	--	--	3.5	--
20+ years	14.9	3.8	2.7	--	8.4	--
Total	92.8	26.6	17.2	30.3	18.7	--
Miscellaneous private corporation						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--
20+ years	--	--	--	--	--	--
Total	--	--	--	--	--	--
Miscellaneous private individual						
1-4 years	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--
10-19 years	3.4	--	--	3.4	--	--
20+ years	--	--	--	--	--	--
Total	3.4	--	--	3.4	--	--
All owners						
1-4 years	74.4	22.8	14.5	30.3	6.8	--
5-9 years	--	--	--	--	--	--
10-19 years	6.9	--	--	3.4	3.5	--
20+ years	14.9	3.8	2.7	--	8.4	--
Total	96.2	26.6	17.2	33.7	18.7	--

Table 38.--Number of all live trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Ponderosa pine	38,729	13,053	8,083	5,980	4,117	2,651	2,058	1,304	698	500	175	59	51	--	--
Eastern redcedar	20,274	11,809	4,533	2,209	1,210	316	144	37	--	16	--	--	--	--	--
Rocky mountain juniper	149	--	--	--	96	29	24	--	--	--	--	--	--	--	--
Total	59,152	24,862	12,616	8,189	5,423	2,996	2,226	1,341	698	516	175	59	51	--	--
Hardwoods															
White oak	15,475	2,675	5,271	2,759	1,528	1,315	768	464	317	105	134	58	59	22	--
Red oak	1,194	341	341	52	89	136	109	77	26	5	6	4	6	2	--
Hickory	4,505	2,046	1,385	562	324	127	42	15	--	--	--	4	--	--	--
Basswood	3,289	2,557	--	134	117	105	133	123	50	29	25	10	4	--	2
Soft maple	2,315	682	341	323	463	320	68	78	24	--	6	--	10	--	--
Boxelder	9,031	5,054	1,087	678	539	734	381	236	175	80	35	16	16	--	--
Elm	19,357	9,523	5,977	2,222	859	467	167	70	49	9	6	4	--	4	--
Green ash	16,905	9,519	1,860	2,432	1,210	599	550	328	184	81	48	25	49	20	--
Cottonwood	10,725	2,717	1,421	1,545	636	837	540	820	596	499	326	229	353	156	50
Black willow	2,438	245	580	270	423	507	190	55	58	60	21	16	13	--	--
Hackberry	10,241	5,216	2,097	1,142	847	339	312	103	49	62	25	15	30	4	--
Black walnut	2,634	1,121	377	351	322	228	142	23	37	23	6	4	--	--	--
Other hardwoods	11,277	5,338	2,963	1,729	552	257	191	104	57	46	18	5	17	--	--
Noncommercial species	7,393	6,446	375	312	11	92	80	28	11	7	26	5	--	--	--
Total	116,779	53,480	24,075	14,511	7,920	6,063	3,673	2,524	1,633	1,006	682	395	557	208	52
All species	175,931	78,342	36,691	22,700	13,343	9,059	5,899	3,865	2,331	1,522	857	454	608	208	52

Table 39.--Number of growing-stock trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height)													
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods															
Ponderosa pine	32,421	11,849	6,305	4,204	3,309	2,221	1,836	1,270	680	489	152	59	47	--	--
Eastern redcedar	18,722	11,658	3,847	1,905	942	235	109	10	--	16	--	--	--	--	--
Total	51,143	23,507	10,152	6,109	4,251	2,456	1,945	1,280	680	505	152	59	47	--	--
Hardwoods															
White oak	10,395	2,675	3,336	1,373	878	873	480	373	208	40	77	38	26	18	--
Red oak	1,100	341	341	52	47	136	94	53	16	5	6	4	3	2	--
Hickory	4,292	2,046	1,385	419	324	76	23	15	--	--	--	4	--	--	--
Basswood	3,031	2,557	--	70	69	69	93	104	34	15	10	4	4	--	2
Soft maple	1,932	682	341	323	318	138	68	42	8	--	6	--	6	--	--
Boxelder	2,879	1,826	375	145	131	224	81	45	28	13	11	--	--	--	--
Elm	16,744	9,188	5,003	1,414	572	359	122	58	13	9	--	4	--	2	--
Green ash	14,148	9,519	1,368	1,149	794	318	424	241	151	66	44	20	49	5	--
Cottonwood	8,945	1,967	1,046	1,545	595	599	414	728	568	456	308	219	333	132	35
Black willow	2,081	245	580	126	350	458	176	33	43	33	12	16	9	--	--
Hackberry	9,789	5,216	2,097	1,031	693	317	191	103	36	54	18	15	14	4	--
Black walnut	2,409	1,121	377	295	315	180	77	--	19	15	6	4	--	--	--
Other hardwoods	8,109	4,963	1,832	812	150	194	70	27	40	7	6	--	8	--	--
Total	85,854	42,346	18,081	8,754	5,236	3,941	2,313	1,822	1,164	713	504	328	452	163	37
All species	136,997	65,853	28,233	14,863	9,487	6,397	4,258	3,102	1,844	1,218	656	387	499	163	37

Table 40.--Number of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	367	171	148	24	18	6	--	--	--	--	--
Eastern redcedar	93	45	35	13	--	--	--	--	--	--	--
Total	460	216	183	37	18	6	--	--	--	--	--
Hardwoods											
White oak	309	--	132	72	52	14	23	11	5	--	--
Red oak	37	--	15	12	10	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	26	--	24	--	--	2	--	--	--	--	--
Soft maple	48	--	--	36	8	--	--	--	4	--	--
Boxelder	94	--	49	--	29	8	8	--	--	--	--
Elm	50	--	19	12	17	--	--	--	--	2	--
Green ash	176	--	85	49	27	15	--	--	--	--	--
Cottonwood	215	--	63	68	--	24	18	7	14	16	5
Black willow	35	--	14	--	15	6	--	--	--	--	--
Hackberry	106	--	74	--	13	--	7	--	12	--	--
Black walnut	41	--	31	--	10	--	--	--	--	--	--
Other hardwoods	58	--	34	13	--	8	--	--	3	--	--
Total	1,195	--	540	262	181	77	56	18	38	18	5
All species	1,655	216	723	299	199	83	56	18	38	18	5

Table 41.--Net volume of growing stock on commercial forest land by species group, Nebraska, 1955 and 1983[1/]

(In thousand cubic feet)

Species group	Growing stock 1955	1983
Softwoods		
Ponderosa pine	79,800	160,316
Eastern redcedar	3,800	9,940
Jack pine	1,000	--
Total	84,600	170,256
Hardwoods		
White oak	31,900	39,400
Red oak	3,400	5,167
Hickory	1,400	4,135
Basswood	5,800	5,992
Soft maple	1,700	5,381
Boxelder	1,600	5,294
Elm	51,300	12,413
Green ash	27,800	25,900
Cottonwood	140,100	142,218
Black willow	6,400	11,060
Hackberry	6,500	16,516
Black walnut	3,400	5,131
Other hardwoods	4,300	7,148
Total	285,600	285,755
All species	370,200	456,011

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1983 areas because of changes in survey definitions and procedures.

Table 42.--Net volume of all live trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Ponderosa pine	172,362	15,009	19,942	23,317	29,511	29,613	21,561	19,080	7,713	3,359	3,257	--	--
Eastern redcedar	12,271	3,839	4,559	2,091	1,249	250	--	283	--	--	--	--	--
Rocky mountain juniper	698	--	386	162	150	--	--	--	--	--	--	--	--
Total	185,331	18,848	24,887	25,570	30,910	29,863	21,561	19,363	7,713	3,359	3,257	--	--
Hardwoods													
White oak	63,269	10,205	8,459	8,876	7,436	6,629	5,982	2,425	4,248	2,690	3,508	2,811	--
Red oak	6,131	253	395	1,167	1,415	1,340	541	176	274	169	209	192	--
Hickory	4,622	1,272	1,639	946	326	278	--	--	--	161	--	--	--
Basswood	7,731	202	436	736	1,640	1,930	915	656	606	341	155	--	114
Soft maple	8,148	730	2,059	2,213	788	1,076	419	--	303	--	560	--	--
Boxelder	17,903	2,010	2,188	4,313	2,676	2,080	1,800	1,288	1,015	246	287	--	--
Elm	17,769	5,512	3,585	3,613	1,915	1,183	956	323	94	181	--	407	--
Green ash	34,448	5,366	4,121	2,853	4,291	3,973	3,026	2,252	1,848	1,065	4,207	1,446	--
Cottonwood	148,967	3,380	2,338	4,951	4,784	10,769	10,929	12,598	11,631	11,056	28,583	27,531	20,417
Black willow	12,546	667	1,662	3,043	2,036	620	1,226	1,170	542	1,060	520	--	--
Hackberry	19,807	2,592	3,310	2,174	2,742	1,344	826	1,828	954	1,171	2,107	759	--
Black walnut	6,521	706	1,230	1,388	1,419	110	600	611	318	139	--	--	--
Other hardwoods	15,771	4,852	2,705	1,824	1,831	1,032	1,152	719	521	91	1,044	--	--
Noncommercial species	3,372	1,084	55	460	694	225	188	101	462	103	--	--	--
Total	367,005	38,831	34,182	38,557	33,993	32,589	28,560	24,147	22,816	18,473	41,180	33,146	20,531
All species	552,336	57,679	59,069	64,127	64,903	62,452	50,121	43,510	30,529	21,832	44,437	33,146	20,531

Table 43.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Nebraska, 1983

(In thousand cubic feet)

Class of timber	All species	Softwoods	Hardwoods
LIVE TREES			
Growing-stock trees			
Sawtimber			
Saw log portion	291,381	131,017	160,364
Upper stem portion	61,667	5,053	56,614
Subtotal	353,048	136,070	216,978
Poletimber	102,963	34,186	68,777
Total growing stock	456,011	170,256	285,755
Cull trees			
Rough and rotten cull trees			
Sawtimber	24,498	2,841	21,657
Poletimber	52,342	9,549	42,793
Subtotal	76,840	12,390	64,450
Short-log trees	19,485	2,685	16,800
Total cull	96,325	15,075	81,250
TOTAL LIVE TREES	552,336	185,331	367,005
SALVABLE DEAD TREES	9,295	1,316	7,979
ALL CLASSES	561,631	186,647	374,984

Table 44.--Net volume of growing stock, sawtimber, short-log, and rough and rotten trees on commercial forest land by individual species, Nebraska, 1983

Species	Total all live	Growing stock	Short-log cull	Rough and rotten cull	Total all live	Sawtimber	Short-log
	Thousand cubic feet				Thousand board feet[1]		
Softwoods							
Ponderosa pine	172,362	160,316	2,198	9,848	807,240	781,654	25,586
Eastern redcedar	12,271	9,940	487	1,844	23,278	18,000	5,278
Rocky mountain juniper	698	--	--	698	--	--	--
Total	185,331	170,256	2,685	12,390	830,518	799,654	30,864
Hardwoods							
White oak	2,128	1,967	161	--	9,763	9,054	709
Bur oak	60,567	36,859	4,496	19,212	127,033	112,770	14,263
Chinkapin oak	461	461	--	--	--	--	--
Post oak	113	113	--	--	565	565	--
Northern red oak	5,097	4,596	205	296	16,309	15,614	695
Black oak	1,034	571	350	113	2,135	953	1,182
Shagbark hickory	2,929	2,629	--	300	652	652	--
Bitternut hickory	1,693	1,506	--	187	2,711	2,711	--
American basswood	7,731	5,992	321	1,418	26,914	25,795	1,119
Red maple	239	131	108	--	258	--	258
Silver maple	7,909	5,250	540	2,119	13,021	11,301	1,720
American elm	13,575	9,768	503	3,304	15,584	14,178	1,406
Siberian elm	1,476	725	136	615	798	365	433
Slippery elm	2,416	1,802	--	614	2,849	2,849	--
Rock elm	302	118	--	184	--	--	--
Green ash	34,448	25,900	1,731	6,817	94,704	89,308	5,396
Eastern cottonwood	148,967	142,218	4,112	2,637	520,930	510,947	9,983
Black willow	12,546	11,060	424	1,062	32,783	31,457	1,326
Hackberry	19,807	16,516	1,404	1,887	48,578	44,675	3,903
Paper birch	577	577	--	--	1,058	1,058	--
Black walnut	6,521	5,131	263	1,127	11,850	11,030	820
Boxelder	17,903	5,294	1,271	11,338	16,763	12,823	3,940
Texas buckeye	1,240	882	89	269	826	545	281
Northern catalpa	225	--	--	225	--	--	--
Honeylocust	2,927	2,155	403	369	8,738	7,495	1,243
Kentucky coffeetree	1,740	1,616	--	124	4,054	4,054	--
Osage-orange	1,249	--	--	1,249	--	--	--
Black locust	91	--	--	91	--	--	--
White mulberry	7,722	1,918	283	5,521	2,833	2,020	813
Total[2]	363,633	285,755	16,800	61,078	961,709	912,219	49,490
All species	548,964	456,011	19,485	73,468	1,792,227	1,711,873	80,354

[1] International 1/4-inch rule.

[2] Does not include noncommercial species. See Table 45 for volumes of noncommercial species.

Table 45.--Net volume of noncommercial species (nongrowing-stock volume) on commercial forest land by individual species, Nebraska, 1983

(In thousand cubic feet)

Species	Nongrowing-stock (rough tree) volume
Peachleaf willow	158
Diamond willow	2,075
Eastern hophornbeam	1,139
All species	3,372

Table 46.--Net volume of growing stock on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1983

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
Softwoods			
Ponderosa pine	160,316	--	160,316
Eastern redcedar	9,940	6,172	3,768
Total	170,256	6,172	164,084
Hardwoods			
White oak	39,400	28,691	10,709
Red oak	5,167	5,167	--
Hickory	4,135	4,135	--
Basswood	5,992	5,159	833
Soft maple	5,381	5,381	--
Boxelder	5,294	4,872	422
Elm	12,413	11,317	1,096
Green ash	25,900	19,768	6,132
Cottonwood	142,218	100,334	41,884
Black willow	11,060	7,846	3,214
Hackberry	16,516	15,617	899
Black walnut	5,131	4,917	214
Other hardwoods	7,148	6,372	776
Total	285,755	219,576	66,179
All species	456,011	225,748	230,263

Table 47.--Net volume of sawtimber on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
Softwoods			
Ponderosa pine	781,654	--	781,654
Eastern redcedar	18,000	10,044	7,956
Total	799,654	10,044	789,610
Hardwoods			
White oak	122,389	90,110	32,279
Red oak	16,567	16,567	--
Hickory	3,363	3,363	--
Basswood	25,795	22,650	3,145
Soft maple	11,301	11,301	--
Boxelder	12,823	12,823	--
Elm	17,392	16,679	713
Green ash	89,308	73,619	15,689
Cottonwood	510,947	350,427	160,520
Black willow	31,457	23,232	8,225
Hackberry	44,675	42,958	1,717
Black walnut	11,030	10,239	791
Other hardwoods	15,172	14,114	1,058
Total	912,219	688,082	224,137
All species	1,711,873	698,126	1,013,747

[1/] International 1/4-inch rule.

Table 48.--Net volume of growing stock on commercial forest land by county and species group, Nebraska, 1983

(In thousand cubic feet)

EASTERN UNIT

County	All species	Species group													
		Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Adams	1,870	--	39	369	42	25	51	118	202	696	51	31	154	53	39
Boone	1,840	--	11	440	48	29	66	151	211	541	51	48	146	44	54
Buffalo	5,449	--	362	201	29	57	92	160	371	3,369	203	96	298	80	131
Burt	3,627	--	85	992	102	70	55	177	302	1,230	66	75	247	88	138
Butler	3,307	--	62	390	72	65	110	195	255	1,575	140	71	206	79	87
Cass	11,278	--	303	1,288	158	194	332	638	1,130	5,297	434	226	802	198	278
Cedar	3,773	--	97	1,184	82	128	41	227	369	890	49	133	332	72	169
Clay	1,338	--	29	289	40	17	23	59	134	523	30	15	100	50	29
Colfax	2,512	--	33	378	75	37	45	61	245	1,162	101	55	160	86	74
Cuming	5,627	--	168	632	82	125	154	293	425	2,848	214	102	340	85	159
Custer	8,068	--	209	1,384	158	322	120	269	962	3,105	245	306	616	164	208
Dakota	4,775	--	87	1,165	109	74	109	256	465	1,657	137	103	387	86	140
Dawson	3,682	--	295	247	40	25	38	61	184	2,348	98	51	145	68	82
Dixon	4,756	--	101	1,857	110	100	22	307	426	819	31	141	444	113	285
Dodge	5,700	--	241	289	32	107	130	242	457	3,244	244	99	376	87	152
Douglas	5,359	--	57	1,613	166	68	131	364	402	1,570	124	107	407	142	208
Fillmore	619	--	14	60	6	13	17	32	96	264	24	18	52	9	14
Franklin	2,671	--	46	611	61	44	61	149	288	937	71	58	201	56	88
Frontier	1,046	--	12	248	28	18	34	77	68	374	34	23	72	25	33
Furnas	2,999	--	140	186	27	48	72	124	207	1,729	121	52	172	43	78
Gage	5,725	--	46	1,520	153	90	161	385	759	1,561	134	146	489	120	161
Gosper	320	--	6	37	6	7	8	9	29	150	15	10	23	11	9
Greeley	186	--	5	17	3	9	3	6	15	81	9	12	16	5	5
Hall	3,353	--	211	136	13	59	62	106	206	2,112	120	50	170	28	80
Hamilton	1,466	--	49	162	32	33	26	39	121	764	54	32	84	34	36
Harlan	2,095	--	30	251	57	20	40	51	205	1,020	97	46	142	75	61
Hitchcock	2,441	--	24	428	64	35	83	176	255	921	82	47	193	77	56
Howard	2,738	--	42	317	69	37	53	70	263	1,321	129	71	188	96	82
Jefferson	8,662	--	152	1,341	155	200	232	474	1,257	3,234	281	247	734	166	189
Johnson	6,327	--	131	704	111	122	198	409	584	2,870	254	139	473	171	161
Kearney	98	--	2	3	1	--	4	3	9	51	6	3	8	4	4
Lancaster	4,684	--	103	457	80	82	158	304	379	2,272	200	92	320	115	122
Madison	1,633	--	23	206	44	21	31	39	160	785	74	37	108	58	47
Merrick	3,629	--	265	257	35	49	59	115	182	2,222	99	56	157	49	84
Nance	6,834	--	171	635	117	103	204	353	534	3,478	309	142	440	159	189
Nemaha	5,927	--	85	839	168	89	109	147	573	2,764	250	137	388	204	174
Nuckolls	4,195	--	183	289	42	78	125	232	265	2,334	167	77	239	57	107
Otoe	8,306	--	163	1,032	197	134	307	556	590	3,930	334	163	490	204	206
Pawnee	6,347	--	274	400	51	115	170	310	474	3,514	264	129	393	89	164
Phelps	415	--	14	118	7	6	5	22	25	148	9	6	32	5	18
Pierce	1,167	--	30	83	17	37	21	38	99	545	66	55	100	38	38
Platte	4,076	--	114	379	54	81	142	261	283	2,083	175	78	257	61	108
Polk	2,003	--	89	179	21	41	33	54	250	1,043	62	40	128	22	41
Red Willow	3,020	--	105	222	34	55	89	160	218	1,631	131	58	187	49	81
Richardson	7,030	--	101	866	189	74	136	170	688	3,408	324	155	466	249	204
Saline	5,535	--	135	507	88	99	198	366	396	2,773	248	114	355	107	149
Sarpy	4,878	--	107	1,590	121	56	89	339	370	1,283	82	107	407	108	219
Saunders	6,137	--	331	297	47	82	135	238	392	3,635	250	120	351	100	159
Seward	3,989	--	70	436	80	67	148	289	320	1,845	165	81	276	110	102

(Table 48 continued on next page)

(Table 48 continued)

County	All species	Species group: Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Sherman	1,673	--	72	153	24	21	29	49	126	929	63	28	98	34	47
Stanton	2,656	--	93	149	13	52	44	132	394	1,214	93	59	264	92	57
Thayer	2,452	--	46	190	45	11	51	72	231	1,242	135	67	189	90	83
Thurston	8,887	--	218	1,840	125	1,387	112	410	509	3,106	209	121	525	161	164
Valley	670	--	14	51	11	14	13	20	61	327	37	23	54	23	22
Washington	8,247	--	116	2,921	258	106	171	514	582	2,134	156	154	672	171	292
Wayne	1,149	--	10	372	43	14	19	53	91	359	22	16	77	32	41
Webster	5,699	--	128	604	85	96	186	343	612	2,641	232	125	409	98	140
York	803	--	23	47	8	11	24	43	62	426	41	19	58	17	24
Total	225,748	--	6,172	33,858	4,135	5,159	5,381	11,317	19,768	100,334	7,846	4,872	15,617	4,917	6,372
WESTERN UNIT															
Antelope	7,718	1,206	257	1,178	--	35	--	85	630	3,930	241	21	67	11	57
Arthur	352	--	3	8	--	--	--	--	12	282	42	--	5	--	--
Banner	3,050	3,050	--	--	--	--	--	--	--	--	--	--	--	--	--
Blaine	994	74	26	211	--	8	--	5	104	530	15	3	9	1	8
Box Butte	54	--	--	--	--	--	--	2	10	35	7	--	--	--	--
Boyd	6,268	2,143	216	522	--	10	--	102	425	2,477	270	27	40	8	28
Brown	7,273	3,367	284	881	--	210	--	25	355	1,746	87	59	91	42	126
Chase	206	--	5	4	--	--	--	--	6	166	22	--	3	--	--
Cherry	9,903	5,483	265	808	--	16	--	55	356	2,564	207	41	46	13	49
Cheyenne	189	--	--	--	--	--	--	--	42	147	--	--	--	--	--
Dawes	52,487	49,846	29	101	--	4	--	52	149	2,009	260	--	34	--	3
Deuel	159	--	7	--	--	--	--	4	19	116	13	--	--	--	--
Dundy	1,254	64	25	105	--	3	--	19	87	851	81	6	11	--	2
Garden	529	215	19	4	--	--	--	--	5	263	21	--	2	--	--
Garfield	1,316	407	31	145	--	4	--	1	64	600	43	3	11	1	6
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hayes	587	275	13	14	--	--	--	14	39	206	22	3	--	--	1
Holt	14,248	4,324	596	1,632	--	32	--	130	883	5,856	494	69	120	23	89
Hooker	569	106	16	115	--	3	--	--	49	252	7	13	4	--	4
Keith	2,571	--	70	52	--	1	--	104	174	1,956	194	--	19	--	1
Keya Paha	10,957	6,025	430	1,121	--	17	--	64	439	2,465	194	48	51	24	79
Kimball	397	397	--	--	--	--	--	--	--	--	--	--	--	--	--
Knox	15,989	3,957	681	2,178	--	446	--	106	1,059	6,474	435	55	254	82	262
Lincoln	3,915	415	322	126	--	--	--	127	284	2,428	166	6	41	--	--
Logan	515	231	48	85	--	1	--	10	26	90	4	6	9	1	4
Loup	502	37	12	94	--	3	--	5	58	267	16	3	4	--	3
McPherson	200	63	3	33	--	1	--	--	14	79	2	3	1	--	1
Morrill	1,125	109	58	--	--	--	--	45	95	764	54	--	--	--	--
Perkins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rock	3,216	1,063	140	454	--	11	--	34	195	1,179	67	18	28	5	22
Scotts Bluff	1,601	146	92	4	--	--	--	26	70	1,201	60	--	2	--	--
Sheridan	34,562	33,319	22	143	--	4	--	22	133	802	89	8	12	1	7
Sioux	41,945	40,608	47	201	--	6	--	47	127	798	68	21	12	2	8
Thomas	3,739	3,229	17	125	--	4	--	--	52	293	4	6	5	--	4
Wheeler	1,873	157	34	365	--	14	--	12	171	1,058	29	3	18	--	12
Total	230,263	160,316	3,768	10,709	--	833	--	1,096	6,132	41,884	3,214	422	899	214	776
All Units	456,011	160,316	9,940	44,567	4,135	5,992	5,381	12,413	25,900	142,218	11,060	5,294	16,516	5,131	7,148

Table 49.--Net volume of sawtimber on commercial forest land by county and species group, Nebraska, 1983

(In thousand board feet)[1/]

EASTERN UNIT

County	All species	Species group													
		Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Adams	5,708	--	58	1,188	30	105	107	146	789	2,354	184	98	429	151	69
Boone	5,478	--	12	1,296	55	137	138	222	900	1,732	226	184	344	122	110
Buffalo	16,956	--	615	833	30	270	228	220	1,246	11,611	501	175	881	73	273
Burt	10,661	--	110	2,762	95	308	77	262	1,222	4,166	218	262	611	206	362
Butler	10,288	--	99	1,344	47	289	228	295	918	5,490	446	179	590	191	172
Cass	35,726	--	448	4,398	172	909	777	865	4,375	18,765	1,297	563	2,202	483	472
Cedar	11,292	--	164	3,343	137	650	90	282	1,513	3,124	162	467	814	116	430
Clay	3,992	--	42	883	11	65	29	69	500	1,758	95	43	283	144	70
Colfax	7,614	--	65	1,110	6	137	44	129	864	4,059	274	127	409	166	224
Cuming	17,959	--	226	2,173	95	577	354	398	1,565	10,272	586	208	994	222	289
Custer	25,652	--	499	4,412	73	1,588	222	374	3,673	10,988	649	888	1,478	260	548
Dakota	14,731	--	120	3,641	98	348	241	358	1,841	5,809	432	310	1,047	181	305
Dawson	10,869	--	533	659	7	108	61	110	591	7,742	255	107	411	90	195
Dixon	13,477	--	94	4,848	230	499	33	382	1,784	2,944	98	534	1,092	164	775
Dodge	18,490	--	368	1,268	57	507	336	281	1,553	11,817	576	134	1,166	158	269
Douglas	15,566	--	32	4,638	169	293	242	536	1,602	5,239	485	386	1,091	338	515
Fillmore	2,013	--	26	209	8	63	41	43	387	946	71	54	122	17	26
Franklin	8,132	--	51	1,775	64	199	122	215	1,187	3,273	230	187	494	134	201
Frontier	3,116	--	17	755	27	83	71	113	251	1,258	128	74	204	65	70
Furnas	9,548	--	226	732	31	226	172	171	708	6,138	315	89	521	78	141
Gage	17,332	--	50	4,519	147	423	330	563	3,263	5,140	561	551	1,118	323	344
Gosper	988	--	16	115	--	31	9	17	93	536	40	23	64	15	29
Greeley	600	--	17	72	--	49	7	8	39	293	24	26	46	3	16
Hall	10,677	--	347	618	27	282	164	128	693	7,384	273	67	528	37	129
Hamilton	4,565	--	90	537	5	148	42	64	421	2,658	141	70	231	65	93
Harlan	6,369	--	62	751	--	64	49	110	696	3,589	258	97	376	126	191
Hitchcock	7,421	--	31	1,383	45	153	168	240	995	3,099	306	149	528	217	107
Howard	8,376	--	100	977	--	147	68	142	869	4,663	342	153	516	149	250
Jefferson	27,636	--	282	4,427	126	971	516	645	5,167	11,330	910	767	1,734	407	354
Johnson	19,692	--	213	2,479	96	575	439	533	2,115	9,991	795	354	1,377	423	302
Kearney	300	--	6	11	--	--	5	6	24	187	16	6	26	2	11
Lancaster	14,673	--	155	1,655	73	375	352	414	1,350	8,003	622	214	953	290	217
Madison	4,978	--	50	622	--	75	36	84	543	2,758	197	82	287	99	145
Merrick	11,070	--	460	867	33	234	131	161	624	7,462	267	124	461	85	161
Nance	21,367	--	277	2,243	80	461	435	532	1,842	12,281	901	310	1,290	314	401
Nemaha	18,021	--	175	2,492	10	337	118	307	1,984	9,691	672	316	1,014	370	535
Nuckolls	13,331	--	293	1,170	63	374	307	314	928	8,212	487	159	735	130	159
Otoe	25,381	--	256	3,491	141	585	632	850	2,184	13,298	1,173	455	1,389	548	379
Pawnee	20,287	--	450	1,627	79	558	422	414	1,666	12,486	718	259	1,176	152	280
Phelps	1,277	--	14	350	14	28	15	25	96	555	19	16	97	7	41
Pierce	3,694	--	91	338	--	192	45	59	260	1,981	167	128	298	21	114
Platte	13,012	--	163	1,471	72	386	340	356	1,007	7,417	528	166	792	157	157
Polk	6,497	--	145	609	13	191	75	72	1,013	3,710	146	97	300	49	77
Red Willow	9,644	--	161	870	41	255	213	219	755	5,847	366	110	567	99	141
Richardson	21,375	--	205	2,590	--	243	158	364	2,347	11,979	857	329	1,242	427	634
Saline	17,456	--	200	1,906	96	468	457	520	1,399	9,796	775	265	1,070	253	251
Sarpy	14,070	--	114	4,461	188	268	188	460	1,517	4,317	321	400	1,085	212	539

(Table 49 continued on next page)

[1/] International 1/4-inch rule.

(Table 49 continued)

County	All species	Species group: Ponderosa pine	Eastern redcedar	Oak	Hickory	Basswood	Soft maple	Elm	Ash	Cotton-wood	Willow	Boxelder	Hackberry	Black walnut	Other hardwoods
Saunders	19,235	--	574	1,219	51	392	326	330	1,261	12,691	655	217	1,076	127	316
Seward	12,293	--	104	1,537	70	301	320	399	1,155	6,347	567	209	814	291	179
Sherman	5,175	--	118	490	13	91	58	77	437	3,242	155	53	272	57	112
Stanton	8,482	--	161	587	17	254	113	96	1,454	4,379	216	129	748	216	112
Thayer	7,489	--	104	601	--	39	83	135	712	4,440	352	130	542	101	250
Thurston	27,698	--	382	5,024	47	5,244	190	1,175	1,790	10,735	562	283	1,517	337	412
Valley	2,083	--	39	181	--	55	24	35	176	1,179	96	53	157	22	66
Washington	24,281	--	106	8,732	249	487	344	722	2,299	7,183	608	560	1,893	400	698
Wayne	3,334	--	--	1,053	26	50	20	85	362	1,207	77	59	197	85	113
Webster	18,148	--	188	2,141	90	449	431	486	2,418	9,337	721	331	1,083	241	232
York	2,551	--	40	194	9	54	58	61	196	1,539	113	37	176	23	51
Total	698,126	--	10,044	106,677	3,363	22,650	11,301	16,679	73,619	350,427	23,232	12,823	42,958	10,239	14,114
WESTERN UNIT															
Antelope	27,919	6,108	328	3,701	--	181	--	79	1,449	15,264	578	--	98	54	79
Arthur	1,222	--	--	40	--	--	--	--	59	1,040	58	--	25	--	--
Banner	14,094	14,094	--	--	--	--	--	--	--	--	--	--	--	--	--
Blaine	3,510	377	19	654	--	40	--	--	253	2,085	73	--	--	3	6
Box Butte	166	--	--	--	--	--	--	--	33	100	33	--	--	--	--
Boyd	24,085	10,681	500	1,535	--	51	--	57	1,217	9,028	861	--	62	37	56
Brown	29,189	16,798	444	2,578	--	700	--	--	920	7,058	224	--	212	118	137
Chase	730	--	14	20	--	--	--	--	29	625	29	--	13	--	--
Cherry	41,639	27,107	423	2,450	--	81	--	34	929	9,885	481	--	87	65	97
Cheyenne	601	--	--	--	--	--	--	--	--	601	--	--	--	--	--
Dawes	248,606	239,628	30	395	--	12	--	69	477	7,437	421	--	137	--	--
Deuel	546	--	29	--	--	--	--	--	63	391	63	--	--	--	--
Dundy	4,437	320	59	339	--	17	--	22	246	3,228	169	--	37	--	--
Garden	2,128	947	72	20	--	--	--	--	29	1,019	28	--	13	--	--
Garfield	5,163	2,014	42	462	--	23	--	--	173	2,345	66	--	24	6	8
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hayes	2,381	1,363	39	38	--	--	--	11	106	716	104	--	--	2	2
Holt	54,227	21,645	1,237	4,904	--	176	--	57	2,158	22,436	1,135	--	197	113	169
Hooker	2,101	535	25	335	--	17	--	--	117	1,033	35	--	--	2	2
Keith	8,879	--	234	223	--	6	--	136	451	7,318	425	--	86	--	--
Keya Paha	45,798	30,055	662	3,384	--	90	--	33	1,161	9,611	437	--	61	121	183
Kimball	1,893	1,893	--	--	--	--	--	--	--	--	--	--	--	--	--
Knox	59,087	19,824	1,271	6,541	--	1,523	--	12	2,676	25,279	925	--	567	220	249
Lincoln	14,087	2,051	1,358	132	--	--	--	33	798	8,910	805	--	--	--	--
Logan	1,976	1,165	152	205	--	6	--	--	51	366	17	--	--	6	8
Loup	1,743	192	10	289	--	17	--	--	149	1,009	73	--	--	2	2
McPherson	781	312	--	98	--	6	--	--	35	321	9	--	--	--	--
Morrill	4,040	463	235	--	--	--	--	45	253	2,787	257	--	--	--	--
Perkins	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rock	12,356	5,288	286	1,343	--	57	--	22	462	4,634	175	--	25	26	38
Scotts Bluff	6,092	623	370	20	--	--	--	21	213	4,619	215	--	11	--	--
Sheridan	165,662	161,587	19	452	--	23	--	12	372	2,899	266	--	24	3	5
Sioux	204,763	200,459	64	591	--	23	--	58	295	3,049	177	--	25	9	13
Thomas	17,097	15,344	24	380	--	22	--	--	118	1,188	17	--	--	2	2
Wheeler	6,749	781	10	1,150	--	74	--	12	397	4,239	69	--	13	2	2
Total	1,013,747	781,654	7,956	32,279	--	3,145	--	713	15,689	160,520	8,225	--	1,717	791	1,058
All Units	1,711,873	781,654	18,000	138,956	3,363	25,795	11,301	17,392	89,308	510,947	31,457	12,823	44,675	11,030	15,172

Table 50.--Net volume of growing stock on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods													
Ponderosa pine	160,316	10,318	17,131	21,133	27,936	29,346	21,432	18,976	7,470	3,359	3,215	--	--
Eastern redcedar	9,940	3,233	3,504	1,726	1,071	123	--	283	--	--	--	--	--
Total	170,256	13,551	20,635	22,859	29,007	29,469	21,432	19,259	7,470	3,359	3,215	--	--
Hardwoods													
White oak	39,400	4,268	4,600	5,769	4,805	5,540	4,289	1,016	2,716	1,923	1,971	2,503	--
Red oak	5,167	253	282	1,167	1,244	868	362	176	274	169	180	192	--
Hickory	4,135	1,131	1,639	672	254	278	--	--	--	161	--	--	--
Basswood	5,992	135	304	566	1,243	1,793	752	433	341	156	155	--	114
Soft maple	5,381	730	1,287	997	788	631	193	--	303	--	452	--	--
Boxelder	5,294	411	529	1,462	907	663	512	320	490	--	--	--	--
Elm	12,413	2,958	2,519	2,956	1,629	1,047	542	323	--	181	--	258	--
Green ash	25,900	2,016	2,735	1,908	3,441	3,060	2,652	2,027	1,835	953	4,207	1,066	--
Cottonwood	142,218	3,380	2,151	3,831	3,986	9,928	10,762	11,953	11,264	10,836	28,066	26,567	19,494
Black willow	11,060	230	1,402	2,910	1,875	492	1,057	1,015	515	1,060	504	--	--
Hackberry	16,516	2,136	2,676	2,063	1,920	1,344	667	1,681	781	1,171	1,318	759	--
Black walnut	5,131	557	1,197	1,135	937	--	399	449	318	139	--	--	--
Other hardwoods	7,148	1,745	681	1,389	668	449	949	246	322	--	699	--	--
Total	285,755	19,950	22,002	26,825	23,697	26,093	23,136	19,639	19,159	16,749	37,552	31,345	19,608
All species	456,011	33,501	42,637	49,684	52,704	55,562	44,568	38,898	26,629	20,108	40,767	31,345	19,608

Table 51.--Net volume of sawtimber on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	781,654	116,659	156,505	169,470	128,198	117,485	48,139	22,676	22,522	--	--
Eastern redcedar	18,000	9,535	5,992	709	--	1,764	--	--	--	--	--
Total	799,654	126,194	162,497	170,179	128,198	119,249	48,139	22,676	22,522	--	--
Hardwoods											
White oak	122,389	--	26,883	29,262	21,613	4,918	12,717	8,654	8,430	9,912	--
Red oak	16,567	--	6,280	4,535	1,912	850	1,261	677	606	446	--
Hickory	3,363	--	1,315	1,396	--	--	--	652	--	--	--
Basswood	25,795	--	6,560	8,838	3,630	2,121	1,784	830	932	--	1,100
Soft maple	11,301	--	3,791	3,166	983	--	1,454	--	1,907	--	--
Boxelder	12,823	--	3,788	2,912	2,305	1,491	2,327	--	--	--	--
Elm	17,392	--	6,725	4,589	2,477	1,487	--	864	--	1,250	--
Green ash	89,308	--	16,548	15,424	13,521	10,212	8,874	4,424	16,896	3,409	--
Cottonwood	510,947	--	19,205	49,945	54,855	59,963	54,452	49,722	112,077	77,757	32,971
Black willow	31,457	--	9,007	2,489	5,383	5,099	2,483	4,807	2,189	--	--
Hackberry	44,675	--	9,187	6,784	3,404	8,442	3,760	5,373	5,606	2,119	--
Black walnut	11,030	--	4,593	--	2,034	2,266	1,520	617	--	--	--
Other hardwoods	15,172	--	2,794	2,061	4,254	1,153	1,530	--	3,380	--	--
Total	912,219	--	116,676	131,401	116,371	98,002	92,162	76,620	152,023	94,893	34,071
All species	1,711,873	126,194	279,173	301,580	244,569	217,251	140,301	99,296	174,545	94,893	34,071

[1/] International 1/4-inch rule.

Table 52.--Net volume of growing stock on commercial forest land by species group and forest type, Nebraska, 1983

(In thousand cubic feet)

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	160,316	156,470	488	--	1,471	287	--	1,295	305
Eastern redcedar	9,940	--	6,378	--	84	712	1,890	876	--
Total	170,256	156,470	6,866	--	1,555	999	1,890	2,171	305
Hardwoods									
White oak	39,400	260	3,057	6,457	16,504	2,717	--	10,405	--
Red oak	5,167	--	349	3,753	--	340	--	725	--
Hickory	4,135	--	--	2,670	653	161	--	651	--
Basswood	5,992	--	676	1,314	--	118	--	3,884	--
Soft maple	5,381	--	--	--	--	5,237	--	144	--
Boxelder	5,294	--	--	--	--	4,025	--	1,269	--
Elm	12,413	--	155	703	89	8,632	712	2,122	--
Green ash	25,900	--	962	508	1,353	15,953	2,236	4,888	--
Cottonwood	142,218	--	4,477	299	--	36,968	96,407	2,993	1,074
Black willow	11,060	--	127	--	--	7,830	2,857	246	--
Hackberry	16,516	--	87	514	1,203	2,211	249	12,252	--
Black walnut	5,131	--	139	1,138	121	937	--	2,796	--
Other hardwoods	7,148	--	293	246	241	2,362	--	4,006	--
Total	285,755	260	10,322	17,602	20,164	87,491	102,461	46,381	1,074
All species	456,011	156,730	17,188	17,602	21,719	88,490	104,351	48,552	1,379

Table 53.--Net volume of sawtimber on commercial forest land by species group and forest type, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	781,654	761,990	3,030	--	6,042	1,754	--	7,604	1,234
Eastern redcedar	18,000	--	12,339	--	--	1,625	2,705	1,331	--
Total	799,654	761,990	15,369	--	6,042	3,379	2,705	8,935	1,234
Hardwoods									
White oak	122,389	--	14,395	22,227	42,454	12,355	--	30,958	--
Red oak	16,567	--	1,283	11,075	--	1,715	--	2,494	--
Hickory	3,363	--	--	1,396	1,315	652	--	--	--
Basswood	25,795	--	2,841	5,033	--	582	--	17,339	--
Soft maple	11,301	--	--	--	--	11,301	--	--	--
Boxelder	12,823	--	--	--	--	9,891	--	2,932	--
Elm	17,392	--	--	896	365	11,140	812	4,179	--
Green ash	89,308	--	3,367	1,226	3,256	56,467	6,463	18,529	--
Cottonwood	510,947	--	18,698	850	--	118,506	363,057	6,447	3,389
Black willow	31,457	--	--	--	--	22,144	8,237	1,076	--
Hackberry	44,675	--	--	--	3,187	7,277	1,252	32,959	--
Black walnut	11,030	--	617	3,255	596	905	--	5,657	--
Other hardwoods	15,172	--	--	1,153	545	3,999	--	9,475	--
Total	912,219	--	41,201	47,111	51,718	256,934	379,821	132,045	3,389
All species	1,711,873	761,990	56,570	47,111	57,760	260,313	382,526	140,980	4,623

[1/] International 1/4-inch rule.

Table 54.--Net volume of growing stock on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods								
Ponderosa pine	160,316	37,438	13,721	--	--	97,160	--	11,997
Eastern redcedar	9,940	--	2,105	--	--	3,729	470	3,636
Total	170,256	37,438	15,826	--	--	100,889	470	15,633
Hardwoods								
White oak	39,400	--	--	--	1,441	28,721	1,238	8,000
Red oak	5,167	--	--	--	556	1,414	--	3,197
Hickory	4,135	--	--	--	--	1,489	1,161	1,485
Basswood	5,992	--	--	--	860	5,132	--	--
Soft maple	5,381	--	--	--	--	5,381	--	--
Boxelder	5,294	--	--	--	--	5,294	--	--
Elm	12,413	--	--	118	207	11,255	--	833
Green ash	25,900	--	--	1,343	--	20,644	231	3,682
Cottonwood	142,218	--	9,678	--	263	116,011	2,735	13,531
Black willow	11,060	--	--	--	--	7,576	997	2,487
Hackberry	16,516	--	--	--	151	15,009	--	1,356
Black walnut	5,131	--	--	--	--	3,015	--	2,116
Other hardwoods	7,148	--	--	--	--	5,533	241	1,374
Total	285,755	--	9,678	1,461	3,478	226,474	6,603	38,061
All species	456,011	37,438	25,504	1,461	3,478	327,363	7,073	53,694

Table 55.--Net volume of sawtimber on commercial forest land by species group and ownership class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Ownership class						
		National Forest	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods								
Ponderosa pine	781,654	173,169	79,275	--	--	475,849	--	53,361
Eastern redcedar	18,000	--	4,011	--	--	5,984	1,932	6,073
Total	799,654	173,169	83,286	--	--	481,833	1,932	59,434
Hardwoods								
White oak	122,389	--	--	--	1,587	95,487	4,762	20,553
Red oak	16,567	--	--	--	1,261	5,492	--	9,814
Hickory	3,363	--	--	--	--	2,048	--	1,315
Basswood	25,795	--	--	--	2,833	22,962	--	--
Soft maple	11,301	--	--	--	--	11,301	--	--
Boxelder	12,823	--	--	--	--	12,823	--	--
Elm	17,392	--	--	--	896	16,131	--	365
Green ash	89,308	--	--	4,410	--	71,487	84	13,327
Cottonwood	510,947	--	46,308	--	--	404,406	10,391	49,842
Black willow	31,457	--	--	--	--	26,757	2,894	1,806
Hackberry	44,675	--	--	--	--	42,596	--	2,079
Black walnut	11,030	--	--	--	--	3,856	--	7,174
Other hardwoods	15,172	--	--	--	--	11,038	545	3,589
Total	912,219	--	46,308	4,410	6,577	726,384	18,676	109,864
All species	1,711,873	173,169	129,594	4,410	6,577	1,208,217	20,608	169,298

[1/] International 1/4-inch rule.

Table 56.--Net volume of growing stock on commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	156,730	--	--	2,258	2,752	6,781	8,032	19,802	22,192	9,640	29,621	33,341	14,880	7,431
Eastern redcedar-hardwood	17,188	278	--	1,243	1,813	--	1,037	1,780	3,252	6,335	505	945	--	--
Oak-hickory	17,602	--	647	--	2,572	8,098	6,285	--	--	--	--	--	--	--
Bur oak	21,719	--	--	--	4,776	1,836	1,227	3,838	5,919	1,842	1,874	407	--	--
Elm-ash-cottonwood	88,490	6,263	561	4,657	8,413	13,903	5,091	14,346	20,340	6,918	3,974	1,938	2,086	--
Cottonwood	104,351	--	1,758	5,851	--	6,537	7,127	39,722	22,525	6,824	14,007	--	--	--
Lowland plains hardwoods	48,552	3,089	2,415	--	6,485	3,452	7,038	4,493	3,160	8,485	4,528	--	5,407	--
Nonstocked	1,379	--	--	--	--	305	--	--	1,074	--	--	--	--	--
All types	456,011	9,630	5,381	14,009	26,811	40,912	35,837	83,981	78,462	40,044	54,509	36,631	22,373	7,431

Table 57.--Net volume of sawtimber on commercial forest land by forest type and stand-age class, Nebraska, 1983

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	761,990	--	--	11,944	7,100	21,215	38,880	91,455	90,191	48,326	146,995	182,416	85,188	38,280
Eastern redcedar-hardwood	56,570	770	--	2,950	2,978	--	2,414	4,503	9,345	28,572	1,932	3,106	--	--
Oak-hickory	47,111	--	1,803	--	5,652	15,667	23,989	--	--	--	--	--	--	--
Bur oak	57,760	--	--	--	7,699	4,529	510	8,932	20,056	7,548	7,150	1,336	--	--
Elm-ash-cottonwood	260,313	22,865	1,381	9,032	24,651	37,765	14,117	39,600	67,410	23,041	9,253	5,667	5,531	--
Cottonwood	382,526	--	7,017	16,283	--	26,050	25,878	138,975	95,561	27,000	45,762	--	--	--
Lowland plains hardwoods	140,980	7,162	7,536	--	15,323	6,407	18,649	16,237	13,166	28,596	16,876	--	11,028	--
Nonstocked	4,623	--	--	--	--	1,234	--	--	3,389	--	--	--	--	--
All types	1,711,873	30,797	17,737	40,209	63,403	112,867	124,437	299,702	299,118	163,083	227,968	192,525	101,747	38,280

[1/] International 1/4-inch rule.

Table 58.--Net volume of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1983

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	146,188	--	880	3,170	1,242	811	18,413	24,975	20,524	16,130	7,200	49,161	3,682	--	--
Poletimber	8,284	--	--	--	--	--	2,097	--	1,395	4,792	--	--	--	--	--
Sapling & seedling	2,258	--	--	--	--	--	--	--	--	2,258	--	--	--	--	--
All stands	156,730	--	880	3,170	1,242	811	20,510	24,975	21,919	23,180	7,200	49,161	3,682	--	--
Eastern redcedar-hardwood															
Sawtimber	11,714	--	131	--	--	--	2,364	2,993	945	5,281	--	--	--	--	--
Poletimber	3,953	--	--	--	--	360	--	1,780	1,813	--	--	--	--	--	--
Sapling & seedling	1,521	--	--	278	--	1,243	--	--	--	--	--	--	--	--	--
All stands	17,188	--	131	278	--	1,603	2,364	4,773	2,758	5,281	--	--	--	--	--
Oak-hickory															
Sawtimber	6,285	--	--	--	--	--	--	--	2,803	3,482	--	--	--	--	--
Poletimber	10,670	--	--	--	--	--	--	--	2,429	2,572	5,669	--	--	--	--
Sapling & seedling	647	--	--	--	--	647	--	--	--	--	--	--	--	--	--
All stands	17,602	--	--	--	--	647	--	--	5,232	6,054	5,669	--	--	--	--
Bur oak															
Sawtimber	12,053	--	--	--	--	1,471	407	4,256	--	5,919	--	--	--	--	--
Poletimber	9,666	--	--	--	--	--	--	1,827	6,003	1,836	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	21,719	--	--	--	--	1,471	407	6,083	6,003	7,755	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	75,355	--	--	2,397	950	6,073	3,659	3,051	8,590	8,301	1,595	16,117	24,622	--	--
Poletimber	7,385	--	--	--	373	561	3,940	--	--	--	2,511	--	--	--	--
Sapling & seedling	5,750	308	943	--	287	717	--	--	3,495	--	--	--	--	--	--
All stands	88,490	308	943	2,397	1,610	7,351	7,599	3,051	12,085	8,301	4,106	16,117	24,622	--	--
Cottonwood															
Sawtimber	98,984	--	--	--	1,379	--	6,620	3,100	8,845	14,664	6,363	24,081	10,167	23,765	--
Poletimber	3,609	--	--	--	--	--	3,609	--	--	--	--	--	--	--	--
Sapling & seedling	1,758	--	263	--	--	--	1,495	--	--	--	--	--	--	--	--
All stands	104,351	--	263	--	1,379	--	11,724	3,100	8,845	14,664	6,363	24,081	10,167	23,765	--
Lowland plains hardwoods															
Sawtimber	33,713	--	--	--	--	1,507	2,746	1,518	--	--	3,748	20,807	2,127	1,260	--
Poletimber	9,335	--	--	--	--	1,501	801	2,727	725	643	--	2,938	--	--	--
Sapling & seedling	5,504	--	--	463	413	1,539	299	2,790	--	--	--	--	--	--	--
All stands	48,552	--	--	463	413	4,547	3,846	7,035	725	643	3,748	23,745	2,127	1,260	--
Nonstocked	1,379	--	305	--	--	1,074	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	384,292	--	1,011	5,567	3,571	9,862	34,209	39,893	41,707	53,777	18,906	110,166	40,598	25,025	--
Poletimber	52,902	--	--	--	373	2,422	10,447	6,334	12,365	9,843	8,180	2,938	--	--	--
Sapling & seedling	17,438	308	1,206	741	700	4,146	1,794	2,790	3,495	2,258	--	--	--	--	--
Nonstocked	1,379	--	305	--	--	1,074	--	--	--	--	--	--	--	--	--
All stands	456,011	308	2,522	6,308	4,644	17,504	46,450	49,017	57,567	65,878	27,086	113,104	40,598	25,025	--

Table 59.--Net volume of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1983

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	730,398	--	3,746	18,648	5,888	3,171	94,689	117,696	104,743	80,094	36,913	251,042	13,768	--	--
Poletimber	19,648	--	--	--	--	--	5,389	--	2,705	11,554	--	--	--	--	--
Sapling & seedling	11,944	--	--	--	--	--	--	--	--	11,944	--	--	--	--	--
All stands	761,990	--	3,746	18,648	5,888	3,171	100,078	117,696	107,448	103,592	36,913	251,042	13,768	--	--
Eastern redcedar-hardwood															
Sawtimber	45,369	--	537	--	--	--	7,721	13,977	3,106	20,028	--	--	--	--	--
Poletimber	7,481	--	--	--	--	--	--	4,503	2,978	--	--	--	--	--	--
Sapling & seedling	3,720	--	--	770	--	2,950	--	--	--	--	--	--	--	--	--
All stands	56,570	--	537	770	--	2,950	7,721	18,480	6,084	20,028	--	--	--	--	--
Oak-hickory															
Sawtimber	23,989	--	--	--	--	--	--	--	12,490	11,499	--	--	--	--	--
Poletimber	21,319	--	--	--	--	--	--	--	4,055	5,652	11,612	--	--	--	--
Sapling & seedling	1,803	--	--	--	--	1,803	--	--	--	--	--	--	--	--	--
All stands	47,111	--	--	--	--	1,803	--	--	16,545	17,151	11,612	--	--	--	--
Bur oak															
Sawtimber	42,173	--	--	--	--	6,042	1,336	14,739	--	20,056	--	--	--	--	--
Poletimber	15,587	--	--	--	--	--	--	2,849	8,209	4,529	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	57,760	--	--	--	--	6,042	1,336	17,588	8,209	24,585	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	222,462	--	--	5,850	3,437	25,593	13,100	8,639	26,691	24,739	4,517	41,436	68,460	--	--
Poletimber	15,330	--	--	--	474	1,381	6,286	--	--	--	7,189	--	--	--	--
Sapling & seedling	22,521	812	4,757	--	931	2,746	--	--	13,275	--	--	--	--	--	--
All stands	260,313	812	4,757	5,850	4,842	29,720	19,386	8,639	39,966	24,739	11,706	41,436	68,460	--	--
Cottonwood															
Sawtimber	369,443	--	--	--	6,391	--	27,327	13,575	36,022	53,053	27,857	104,481	28,542	72,195	--
Poletimber	6,066	--	--	--	--	--	6,066	--	--	--	--	--	--	--	--
Sapling & seedling	7,017	--	--	--	--	--	7,017	--	--	--	--	--	--	--	--
All stands	382,526	--	--	--	6,391	--	40,410	13,575	36,022	53,053	27,857	104,481	28,542	72,195	--
Lowland plains hardwoods															
Sawtimber	108,122	--	--	--	--	4,225	7,358	5,623	--	--	13,546	66,734	7,369	3,267	--
Poletimber	18,160	--	--	--	--	2,863	1,127	6,068	339	925	--	6,838	--	--	--
Sapling & seedling	14,698	--	--	1,377	--	6,159	1,513	5,649	--	--	--	--	--	--	--
All stands	140,980	--	--	1,377	--	13,247	9,998	17,340	339	925	13,546	73,572	7,369	3,267	--
Nonstocked	4,623	--	1,234	--	--	3,389	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	1,541,956	--	4,283	24,498	15,716	39,031	151,531	174,249	183,052	209,469	82,833	463,693	118,139	75,462	--
Poletimber	103,591	--	--	--	474	4,244	18,868	13,420	18,286	22,660	18,801	6,838	--	--	--
Sapling & seedling	61,703	812	4,757	2,147	931	13,658	8,530	5,649	13,275	11,944	--	--	--	--	--
Nonstocked	4,623	--	1,234	--	--	3,389	--	--	--	--	--	--	--	--	--
All stands	1,711,873	812	10,274	26,645	17,121	60,322	178,929	193,318	214,613	244,073	101,634	470,531	118,139	75,462	--

[1/] International 1/4-inch rule.

Table 60.--Net volume of sawtimber on commercial forest land by species group and butt log-grade, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All grades	Butt log grade			
		1	2	3	Tie and timber
Softwoods					
Ponderosa pine	781,654	3,844	31,988	745,822	--
Eastern redcedar	18,000	--	--	18,000	--
Total	799,654	3,844	31,988	763,822	--
Hardwoods					
White oak	122,389	3,706	37,872	61,503	19,308
Red oak	16,567	--	2,767	13,800	--
Hickory	3,363	--	1,306	2,057	--
Basswood	25,795	1,677	5,738	18,380	--
Soft maple	11,301	--	--	10,262	1,039
Boxelder	12,823	--	563	8,850	3,410
Elm	17,392	1,859	5,291	5,927	4,315
Green ash	89,308	4,951	26,448	47,826	10,083
Cottonwood	510,947	203,039	157,036	130,074	20,798
Black willow	31,457	2,156	5,306	19,121	4,874
Hackberry	44,675	--	25,666	19,009	--
Black walnut	11,030	195	3,248	7,587	--
Other hardwoods	15,172	--	3,656	10,749	767
Total	912,219	217,583	274,897	355,145	64,594
All species	1,711,873	221,427	306,885	1,118,967	64,594

[1/] International 1/4-inch rule.

Table 61.--Net volume of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	2,198	846	1,002	162	129	59	--	--	--	--	--
Eastern redcedar	487	233	178	76	--	--	--	--	--	--	--
Total	2,685	1,079	1,180	238	129	59	--	--	--	--	--
Hardwoods											
White oak	4,657	--	1,170	844	857	387	725	404	270	--	--
Red oak	555	--	171	205	179	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	321	--	267	--	--	54	--	--	--	--	--
Soft maple	648	--	--	445	95	--	--	--	108	--	--
Boxelder	1,271	--	447	--	387	187	250	--	--	--	--
Elm	639	--	105	136	249	--	--	--	--	149	--
Green ash	1,731	--	577	649	280	225	--	--	--	--	--
Cottonwood	4,112	--	456	794	--	480	367	136	381	867	631
Black willow	424	--	161	--	169	94	--	--	--	--	--
Hackberry	1,404	--	481	--	159	--	173	--	591	--	--
Black walnut	263	--	157	--	106	--	--	--	--	--	--
Other hardwoods	775	--	403	178	--	89	--	--	105	--	--
Total	16,800	--	4,395	3,251	2,481	1,516	1,515	540	1,455	1,016	631
All species	19,485	1,079	5,575	3,489	2,610	1,575	1,515	540	1,455	1,016	631

Table 62.--Net volume of short-log trees on commercial forest land by species group and diameter class, Nebraska, 1983

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods											
Ponderosa pine	25,586	7,524	12,011	2,386	2,337	1,328	--	--	--	--	--
Eastern redcedar	5,278	2,217	1,993	1,068	--	--	--	--	--	--	--
Total	30,864	9,741	14,004	3,454	2,337	1,328	--	--	--	--	--
Hardwoods											
White oak	14,972	--	5,563	3,193	2,620	967	1,530	737	362	--	--
Red oak	1,877	--	571	695	611	--	--	--	--	--	--
Hickory	--	--	--	--	--	--	--	--	--	--	--
Basswood	1,119	--	927	--	--	192	--	--	--	--	--
Soft maple	1,978	--	--	1,416	304	--	--	--	258	--	--
Boxelder	3,940	--	1,385	--	1,234	583	738	--	--	--	--
Elm	1,839	--	318	433	794	--	--	--	--	294	--
Green ash	5,396	--	1,744	2,067	890	695	--	--	--	--	--
Cottonwood	9,983	--	1,405	2,522	--	1,500	1,088	383	986	1,459	640
Black willow	1,326	--	493	--	537	296	--	--	--	--	--
Hackberry	3,903	--	1,446	--	506	--	517	--	1,434	--	--
Black walnut	820	--	480	--	340	--	--	--	--	--	--
Other hardwoods	2,337	--	1,243	566	--	281	--	--	247	--	--
Total	49,490	--	15,575	10,892	7,836	4,514	3,873	1,120	3,287	1,753	640
All species	80,354	9,741	29,579	14,346	10,173	5,842	3,873	1,120	3,287	1,753	640

[1/] International 1/4-inch rule.

Table 63.--Net annual growth of growing stock on commercial forest land by softwoods and hardwoods, Nebraska, 1955 and 1982

(In thousand cubic feet)

Species	1955[1/]	1982
Softwoods	3,400	6,038
Hardwoods	5,100	5,061
All species	8,500	11,099

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1982 volumes because of changes in survey definitions and procedures.

Table 64.--Net annual growth of growing stock on commercial forest land by species group and Forest Survey Unit, Nebraska, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	5,415	--	5,415
Eastern redcedar	623	489	134
Total	6,038	489	5,549
Hardwoods			
White oak	718	494	224
Red oak	70	70	--
Hickory	125	125	--
Basswood	112	96	16
Soft maple	199	199	--
Boxelder	180	168	12
Elm	288	368	-80
Green ash	408	264	144
Cottonwood	1,703	1,278	425
Black willow	137	91	46
Hackberry	665	631	34
Black walnut	135	129	6
Other hardwoods	321	289	32
Total	5,061	4,202	859
All species	11,099	4,691	6,408

Table 65.--Net annual growth of sawtimber on commercial forest land by species group and Forest Survey Unit, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: Eastern Unit	Forest Survey Unit: Western Unit
Softwoods			
Ponderosa pine	27,197	--	27,197
Eastern redcedar	502	333	169
Total	27,699	333	27,366
Hardwoods			
White oak	3,543	1,953	1,590
Red oak	96	96	--
Hickory	28	28	--
Basswood	1,015	976	39
Soft maple	386	386	--
Boxelder	369	369	--
Elm	316	769	-453
Green ash	1,095	757	338
Cottonwood	4,690	4,320	370
Black willow	263	61	202
Hackberry	2,571	2,512	59
Black walnut	236	217	19
Other hardwoods	422	383	39
Total	15,030	12,827	2,203
All species	42,729	13,160	29,569

[1/] International 1/4-inch rule.

Table 66.--Net annual growth of growing stock on commercial forest land by species group and ownership class, Nebraska, 1982

(In thousand cubic feet)

Species group	All classes	Ownership class							
		National Forest	Misc. federal	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods									
Ponderosa pine	5,415	1,479	--	350	--	--	3,281	--	305
Eastern redcedar	623	--	--	30	--	--	349	9	235
Total	6,038	1,479	--	380	--	--	3,630	9	540
Hardwoods									
White oak	718	--	--	--	--	27	462	19	210
Red oak	70	--	--	--	--	16	29	--	25
Hickory	125	--	--	--	--	--	54	33	38
Basswood	112	--	--	--	--	24	88	--	--
Soft maple	199	--	--	--	--	--	199	--	--
Boxelder	180	--	--	--	--	--	180	--	--
Elm	288	--	--	--	2	-59	334	--	11
Green ash	408	--	--	--	19	-72	394	6	61
Cottonwood	1,703	--	--	158	--	12	1,355	7	171
Black willow	137	--	--	--	--	--	87	-34	84
Hackberry	665	--	--	--	--	6	607	--	52
Black walnut	135	--	--	--	--	--	85	--	50
Other hardwoods	321	--	--	--	--	--	264	5	52
Total	5,061	--	--	158	21	-46	4,138	36	754
All species	11,099	1,479	--	538	21	-46	7,768	45	1,294

Table 67.--Net annual growth of sawtimber on commercial forest land by species group and ownership class, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All classes	Ownership class							
		National Forest	Misc. federal	State	County and municipal	Indian	Farmer	Misc. private coporation	Misc. private individual
Softwoods									
Ponderosa pine	27,197	5,915	--	4,784	--	--	15,324	--	1,174
Eastern redcedar	502	--	--	103	--	--	178	30	191
Total	27,699	5,915	--	4,887	--	--	15,502	30	1,365
Hardwoods									
White oak	3,543	--	--	--	--	24	1,231	55	2,233
Red oak	96	--	--	--	--	19	107	--	-30
Hickory	28	--	--	--	--	--	22	--	6
Basswood	1,015	--	--	--	--	35	980	--	--
Soft maple	386	--	--	--	--	--	386	--	--
Boxelder	369	--	--	--	--	--	369	--	--
Elm	316	--	--	--	--	-237	547	--	6
Green ash	1,095	--	--	--	64	-367	1,231	2	165
Cottonwood	4,690	--	--	700	--	--	3,173	149	668
Black willow	263	--	--	--	--	--	449	-239	53
Hackberry	2,571	--	--	--	--	--	2,516	--	55
Black walnut	236	--	--	--	--	--	72	--	164
Other hardwoods	422	--	--	--	--	--	308	14	100
Total	15,030	--	--	700	64	-526	11,391	-19	3,420
All species	42,729	5,915	--	5,587	64	-526	26,893	11	4,785

[1/] International 1/4-inch rule.

Table 68.--Net annual growth of growing stock on commercial forest land by species group and forest type, Nebraska, 1982

(In thousand cubic feet)

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	5,415	5,336	5	--	32	3	--	29	10
Eastern redcedar	623	--	439	--	5	98	42	39	--
Total	6,038	5,336	444	--	37	101	42	68	10
Hardwoods									
White oak	718	8	47	110	442	35	--	76	--
Red oak	70	--	4	41	--	7	--	18	--
Hickory	125	--	--	74	13	--	--	38	--
Basswood	112	--	6	35	--	1	--	70	--
Soft maple	199	--	--	--	--	194	--	5	--
Boxelder	180	--	--	--	--	138	--	42	--
Elm	288	--	-90	-40	1	344	32	41	--
Green ash	408	--	18	-58	44	254	53	97	--
Cottonwood	1,703	--	49	8	-237	543	1,321	7	12
Black willow	137	--	5	--	--	146	-16	2	--
Hackberry	665	--	2	23	41	175	7	417	--
Black walnut	135	--	1	28	3	25	--	78	--
Other hardwoods	321	--	14	7	5	139	--	156	--
Total	5,061	8	56	228	312	2,001	1,397	1,047	12
All species	11,099	5,344	500	228	349	2,102	1,439	1,115	22

Table 69.--Net annual growth of sawtimber on commercial forest land by species group and forest type, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	27,197	26,847	34	--	74	23	--	178	41
Eastern redcedar	502	--	292	--	--	58	102	50	--
Total	27,699	26,847	326	--	74	81	102	228	41
Hardwoods									
White oak	3,543	--	185	291	1,468	144	--	1,455	--
Red oak	96	--	7	-11	--	29	--	71	--
Hickory	28	--	--	21	6	1	--	--	--
Basswood	1,015	--	23	84	--	3	--	905	--
Soft maple	386	--	--	--	--	386	--	--	--
Boxelder	369	--	--	--	--	258	--	111	--
Elm	316	--	-467	-237	6	136	812	66	--
Green ash	1,095	--	67	-332	99	809	155	297	--
Cottonwood	4,690	--	190	16	-1,067	1,613	3,895	18	25
Black willow	263	--	--	--	--	353	-95	5	--
Hackberry	2,571	--	--	--	64	194	34	2,279	--
Black walnut	236	--	2	86	15	11	--	122	--
Other hardwoods	422	--	--	33	14	51	--	324	--
Total	15,030	--	7	-49	605	3,988	4,801	5,653	25
All species	42,729	26,847	333	-49	679	4,069	4,903	5,881	66

[1/] International 1/4-inch rule.

Table 70.--Net annual growth of growing stock on commercial forest land by forest type and stand-age class, Nebraska, 1982

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	5,344	--	--	300	436	419	430	694	654	246	604	922	314	325
Eastern redcedar-hardwood	500	8	--	-54	185	--	21	21	179	98	10	32	--	--
Oak-hickory	228	--	19	--	-67	192	84	--	--	--	--	--	--	--
Bur oak	349	--	--	--	153	27	17	201	112	28	-196	7	--	--
Elm-ash-cottonwood	2,102	254	13	105	163	367	44	328	476	138	105	99	10	--
Cottonwood	1,439	--	42	329	--	85	29	422	185	112	235	--	--	--
Lowland plains hardwoods	1,115	60	60	--	233	95	157	46	52	182	136	--	94	--
Nonstocked	22	--	--	--	--	10	--	--	12	--	--	--	--	--
All types	11,099	322	134	680	1,103	1,195	782	1,712	1,670	804	894	1,060	418	325

Table 71.--Net annual growth of sawtimber on commercial forest land by forest type and stand-age class, Nebraska, 1982

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Ponderosa pine	26,847	--	--	223	204	618	2,387	2,970	5,148	1,201	2,749	6,276	4,512	559
Eastern redcedar-hardwood	333	15	--	-444	114	--	43	34	122	336	30	83	--	--
Oak-hickory	-49	--	43	--	-535	234	209	--	--	--	--	--	--	--
Bur oak	679	--	--	--	204	52	5	83	1,199	93	-981	24	--	--
Elm-ash-cottonwood	4,069	408	19	127	537	931	57	671	995	251	196	-138	15	--
Cottonwood	4,903	--	119	469	--	451	217	1,925	527	460	735	--	--	--
Lowland plains hardwoods	5,881	111	154	--	1,176	153	1,789	1,429	190	428	341	--	110	--
Nonstocked	66	--	--	--	--	41	--	--	25	--	--	--	--	--
All types	42,729	534	335	375	1,700	2,480	4,707	7,112	8,206	2,769	3,070	6,245	4,637	559

[1/] International 1/4-inch rule.

Table 72.--Net annual growth of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1982

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	4,463	--	24	92	32	27	419	1,354	676	600	-48	1,157	130	--	--
Poletimber	581	--	--	--	--	--	48	--	47	486	--	--	--	--	--
Sapling & seedling	300	--	--	--	--	--	--	--	--	300	--	--	--	--	--
All stands	5,344	--	24	92	32	27	467	1,354	723	1,386	-48	1,157	130	--	--
Eastern redcedar-hardwood															
Sawtimber	327	--	1	--	--	--	37	36	32	221	--	--	--	--	--
Poletimber	219	--	--	--	--	13	--	21	185	--	--	--	--	--	--
Sapling & seedling	-46	--	--	8	--	-54	--	--	--	--	--	--	--	--	--
All stands	500	--	1	8	--	-41	37	57	217	221	--	--	--	--	--
Oak-hickory															
Sawtimber	84	--	--	--	--	--	--	--	64	20	--	--	--	--	--
Poletimber	125	--	--	--	--	--	--	--	55	-67	137	--	--	--	--
Sapling & seedling	19	--	--	--	--	19	--	--	--	--	--	--	--	--	--
All stands	228	--	--	--	--	19	--	--	119	-47	137	--	--	--	--
Bur oak															
Sawtimber	119	--	--	--	--	-205	7	205	--	112	--	--	--	--	--
Poletimber	230	--	--	--	--	--	--	33	170	27	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	349	--	--	--	--	-205	7	238	170	139	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	1,803	--	--	36	18	87	129	24	269	243	35	336	626	--	--
Poletimber	186	--	--	--	9	13	93	--	--	--	71	--	--	--	--
Sapling & seedling	113	4	22	--	9	12	--	--	66	--	--	--	--	--	--
All stands	2,102	4	22	36	36	112	222	24	335	243	106	336	626	--	--
Cottonwood															
Sawtimber	1,145	--	--	--	27	--	176	22	216	230	115	117	119	123	--
Poletimber	252	--	--	--	--	--	252	--	--	--	--	--	--	--	--
Sapling & seedling	42	--	12	--	--	--	30	--	--	--	--	--	--	--	--
All stands	1,439	--	12	--	27	--	458	22	216	230	115	117	119	123	--
Lowland plains hardwoods															
Sawtimber	736	--	--	--	--	52	109	-43	--	--	68	485	26	39	--
Poletimber	259	--	--	--	--	31	14	94	1	9	--	110	--	--	--
Sapling & seedling	120	--	--	10	11	39	14	46	--	--	--	--	--	--	--
All stands	1,115	--	--	10	11	122	137	97	1	9	68	595	26	39	--
Nonstocked	22	--	10	--	--	12	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	8,677	--	25	128	77	-39	877	1,598	1,257	1,426	170	2,095	901	162	--
Poletimber	1,852	--	--	--	9	57	407	148	458	455	208	110	--	--	--
Sapling & seedling	548	4	34	18	20	16	44	46	66	300	--	--	--	--	--
Nonstocked	22	--	10	--	--	12	--	--	--	--	--	--	--	--	--
All stands	11,099	4	69	146	106	46	1,328	1,792	1,781	2,181	378	2,205	901	162	--

Table 73.--Net annual growth of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Nebraska, 1982

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Ponderosa pine															
Sawtimber	26,242	--	100	590	130	87	2,798	5,841	3,498	1,800	-91	11,059	430	--	--
Poletimber	382	--	--	--	--	--	25	--	80	277	--	--	--	--	--
Sapling & seedling	223	--	--	--	--	--	--	--	--	223	--	--	--	--	--
All stands	26,847	--	100	590	130	87	2,823	5,841	3,578	2,300	-91	11,059	430	--	--
Eastern redcedar-hardwood															
Sawtimber	614	--	4	--	--	--	96	165	83	266	--	--	--	--	--
Poletimber	148	--	--	--	--	--	--	34	114	--	--	--	--	--	--
Sapling & seedling	-429	--	--	15	--	-444	--	--	--	--	--	--	--	--	--
All stands	333	--	4	15	--	-444	96	199	197	266	--	--	--	--	--
Oak-hickory															
Sawtimber	209	--	--	--	--	--	--	--	207	2	--	--	--	--	--
Poletimber	-301	--	--	--	--	--	--	--	47	-535	187	--	--	--	--
Sapling & seedling	43	--	--	--	--	43	--	--	--	--	--	--	--	--	--
All stands	-49	--	--	--	--	43	--	--	254	-533	187	--	--	--	--
Bur oak															
Sawtimber	380	--	--	--	--	-993	24	150	--	1,199	--	--	--	--	--
Poletimber	299	--	--	--	--	--	--	38	209	52	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
All stands	679	--	--	--	--	-993	24	188	209	1,251	--	--	--	--	--
Elm-ash-cottonwood															
Sawtimber	3,420	--	--	43	55	310	-12	45	312	566	73	597	1,431	--	--
Poletimber	294	--	--	--	16	19	103	--	--	--	156	--	--	--	--
Sapling & seedling	355	8	114	--	35	24	--	--	174	--	--	--	--	--	--
All stands	4,069	8	114	43	106	353	91	45	486	566	229	597	1,431	--	--
Cottonwood															
Sawtimber	4,642	--	--	--	108	--	653	88	909	1,423	475	390	285	311	--
Poletimber	142	--	--	--	--	--	142	--	--	--	--	--	--	--	--
Sapling & seedling	119	--	--	--	--	--	119	--	--	--	--	--	--	--	--
All stands	4,903	--	--	--	108	--	914	88	909	1,423	475	390	285	311	--
Lowland plains hardwoods															
Sawtimber	4,564	--	--	--	--	864	320	39	--	--	188	2,271	814	68	--
Poletimber	1,052	--	--	--	--	34	14	150	3	9	--	842	--	--	--
Sapling & seedling	265	--	--	28	--	126	67	44	--	--	--	--	--	--	--
All stands	5,881	--	--	28	--	1,024	401	233	3	9	188	3,113	814	68	--
Nonstocked	66	--	41	--	--	25	--	--	--	--	--	--	--	--	--
All types															
Sawtimber	40,071	--	104	633	293	268	3,879	6,328	5,009	5,256	645	14,317	2,960	379	--
Poletimber	2,016	--	--	--	16	53	284	222	453	-197	343	842	--	--	--
Sapling & seedling	576	8	114	43	35	-251	186	44	174	223	--	--	--	--	--
Nonstocked	66	--	41	--	--	25	--	--	--	--	--	--	--	--	--
All stands	42,729	8	259	676	344	95	4,349	6,594	5,636	5,282	988	15,159	2,960	379	--

[1/] International 1/4-inch rule.

Table 74.--Timber removals from growing stock on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1982

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
Softwoods			
Ponderosa pine	517	--	517
Eastern redcedar	56	34	22
Total	573	34	539
Hardwoods			
White oak	2,233	1,659	574
Red oak	247	247	--
Hickory	165	165	--
Basswood	30	28	2
Soft maple	27	27	--
Boxelder	319	301	18
Elm	281	262	19
Green ash	790	574	216
Cottonwood	3,190	2,904	286
Black willow	401	305	96
Hackberry	449	423	26
Black walnut	166	162	4
Other hardwoods	479	363	116
Total	8,777	7,420	1,357
All species	9,350	7,454	1,896

Table 75.--Timber removals from sawtimber on commercial forest land, by species group and Forest Survey Unit, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit	
		Eastern Unit	Western Unit
Softwoods			
Ponderosa pine	2,376	--	2,376
Eastern redcedar	170	139	31
Total	2,546	139	2,407
Hardwoods			
White oak	6,190	4,618	1,572
Red oak	674	674	--
Hickory	435	435	--
Basswood	93	89	4
Soft maple	101	101	--
Boxelder	1,269	1,269	--
Elm	789	730	59
Green ash	2,161	1,576	585
Cottonwood	17,356	15,962	1,394
Black willow	1,084	823	261
Hackberry	1,217	1,145	72
Black walnut	1,044	1,016	28
Other hardwoods	1,305	989	316
Total	33,718	29,427	4,291
All species	36,264	29,566	6,698

[1/] International 1/4-inch rule.

Table 76.--Timber removals from growing stock and sawtimber on commercial forest land by species group, Nebraska, 1953 and 1982

Species group	Growing stock		Sawtimber	
	1953[1/]	1982	1953[1/]	1982
	Thousand cubic feet		Thousand board feet[2/]	
Softwoods				
Ponderosa pine	63	517	372	2,376
Eastern redcedar	--	56	--	170
Total	63	573	372	2,546
Hardwoods				
Oak	901	2,480	3,960	6,864
Soft maple	229	27	1,011	101
Boxelder	173	319	689	1,269
Elm	410	281	1,685	789
Green ash	149	790	538	2,161
Cottonwood	1,172	3,190	6,716	17,356
Hackberry	5	449	27	1,217
Black walnut	289	166	1,584	1,044
Other hardwoods	390	1,075	1,391	2,917
Total	3,718	8,777	17,601	33,718
All species	3,781	9,350	17,973	36,264

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1982 volumes because of changes in survey definitions and procedures.

[2/] International 1/4-inch rule.

Table 77.--Timber removals from growing stock and sawtimber on commercial forest land by item and species category, Nebraska, 1982

Item	All species	Softwoods	Oak	Elm-hackberry	Ash	Cottonwood	Walnut	Other hardwoods
	GROWING STOCK							
	Species category							
	Thousand cubic feet							
ROUNDWOOD PRODUCTS								
Saw logs	2,915	313	55	5	8	2,377	140	17
Veneer logs	112	--	--	--	--	99	13	--
Cooperage logs	18	--	18	--	--	--	--	--
Fuelwood	5,167	9	2,327	683	756	248	--	1,144
Posts	79	60	11	1	--	1	--	6
Pulpwood	12	12	--	--	--	--	--	--
Other	94	94	--	--	--	--	--	--
Total	8,397	488	2,411	689	764	2,725	153	1,167
LOGGING RESIDUE	440	39	20	--	3	364	13	1
OTHER REMOVALS	513	46	49	41	23	101	--	253
ALL TIMBER REMOVALS	9,350	573	2,480	730	790	3,190	166	1,421
	SAWTIMBER							
	Thousand board feet[1/]							
ROUNDWOOD PRODUCTS								
Saw logs	18,551	1,767	265	42	51	15,420	911	95
Veneer logs	518	--	--	--	--	433	85	--
Cooperage logs	106	--	106	--	--	--	--	--
Fuelwood	14,190	27	6,415	1,886	2,081	682	--	3,099
Posts	93	37	30	3	--	3	--	20
Pulpwood	18	18	--	--	--	--	--	--
Other	512	512	--	--	--	--	--	--
Total	33,988	2,361	6,816	1,931	2,132	16,538	996	3,214
LOGGING RESIDUE	905	77	32	--	7	739	48	2
OTHER REMOVALS	1,371	108	16	75	22	79	--	1,071
ALL TIMBER REMOVALS	36,264	2,546	6,864	2,006	2,161	17,356	1,044	4,287

[1/] International 1/4-inch rule.

Table 78.--Net annual growth and removals of growing stock on commercial forest land by species group, Nebraska, 1982

(In thousand cubic feet)

Species group	Net annual growth	Annual timber removals
Softwoods		
Ponderosa pine	5,415	517
Eastern redcedar	623	56
Total	6,038	573
Hardwoods		
White oak	718	2,233
Red oak	70	247
Hickory	125	165
Basswood	112	30
Soft maple	199	27
Boxelder	180	319
Elm	288	281
Green ash	408	790
Cottonwood	1,703	3,190
Black willow	137	401
Hackberry	665	449
Black walnut	135	166
Other hardwoods	321	479
Total	5,061	8,777
All species	11,099	9,350

Table 79.--Net annual growth and removals of sawtimber on commercial forest land by species group, Nebraska, 1982

(In thousand board feet)[1/]

Species group	Net annual growth	Annual timber removals
Softwoods		
Ponderosa pine	27,197	2,376
Eastern redcedar	502	170
Total	27,699	2,546
Hardwoods		
White oak	3,543	6,190
Red oak	96	674
Hickory	28	435
Basswood	1,015	93
Soft maple	386	101
Boxelder	369	1,269
Elm	316	789
Green ash	1,095	2,161
Cottonwood	4,690	17,356
Black willow	263	1,084
Hackberry	2,571	1,217
Black walnut	236	1,044
Other hardwoods	422	1,305
Total	15,030	33,718
All species	42,729	36,264

[1/] International 1/4-inch rule.

Table 80.--Net annual growth and removals of growing stock on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

(In thousand cubic feet)

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	1,479	1,479	--	10	10	--
State	538	380	158	16	--	16
County & municipal	21	--	21	--	--	--
Indian	-46	--	-46	58	--	58
Total	1,992	1,859	133	84	10	74
PRIVATE						
Farmer and Misc. private	9,107	4,179	4,928	9,266	563	8,703
All owners	11,099	6,038	5,061	9,350	573	8,777

Table 81.--Net annual growth and removals of sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

(In thousand board feet)[1/]

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	5,915	5,915	--	23	23	--
State	5,587	4,887	700	22	--	22
County & municipal	64	--	64	--	--	--
Indian	-526	--	-526	291	--	291
Total	11,040	10,802	238	336	23	313
PRIVATE						
Farmer and Misc. private	31,689	16,897	14,792	35,928	2,523	33,405
All owners	42,729	27,699	15,030	36,264	2,546	33,718

[1/] International 1/4-inch rule.

Table 82.--Net annual mortality of growing stock on commercial forest land by softwoods and hardwoods, Nebraska, 1955 and 1982

(In thousand cubic feet)

Species	1955[1/]	1982
Softwoods	200	438
Hardwoods	1,700	1,745
All species	1,900	2,183

[1/] Figures have been adjusted from those published after the 1955 survey to conform to 1982 volumes because of changes in survey definitons and procedures.

Table 83.--Annual mortality of growing stock on commercial forest land by species group and cause, Nebraska, 1982

(In thousand cubic feet)

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Ponderosa pine	401	72	84	--	--	--	--	245
Eastern redcedar	37	--	--	--	--	--	--	37
Total	438	72	84	--	--	--	--	282
Hardwoods								
White oak	77	--	--	--	--	--	--	77
Red oak	72	--	--	--	--	72	--	--
Hickory	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--
Soft maple	--	--	--	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--
Elm	311	--	136	--	--	--	--	175
Green ash	106	--	--	--	--	--	--	106
Cottonwood	898	--	--	--	--	225	--	673
Black willow	208	--	96	--	--	--	--	112
Hackberry	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--
Other hardwoods	73	--	--	--	--	--	--	73
Total	1,745	--	232	--	--	297	--	1,216
All species	2,183	72	316	--	--	297	--	1,498

Table 84.--Annual mortality of sawtimber on commercial forest land by species group and cause, Nebraska, 1982

(In thousand board feet)[1/]

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
Softwoods								
Ponderosa pine	1,566	403	--	--	--	--	--	1,163
Eastern redcedar	--	--	--	--	--	--	--	--
Total	1,566	403	--	--	--	--	--	1,163
Hardwoods								
White oak	--	--	--	--	--	--	--	--
Red oak	369	--	--	--	--	369	--	--
Hickory	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--
Soft maple	--	--	--	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--
Elm	923	--	467	--	--	--	--	456
Green ash	367	--	--	--	--	--	--	367
Cottonwood	3,502	--	--	--	--	835	--	2,667
Black willow	564	--	--	--	--	--	--	564
Hackberry	--	--	--	--	--	--	--	--
Black walnut	--	--	--	--	--	--	--	--
Other hardwoods	--	--	--	--	--	--	--	--
Total	5,725	--	467	--	--	1,204	--	4,054
All species	7,291	403	467	--	--	1,204	--	5,217

[1/] International 1/4-inch rule.

Table 85.--Annual mortality of growing stock and sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Nebraska, 1982

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
National Forest	121	121	--	385	385	--
State	37	37	--	--	--	--
County and municipal	--	--	--	--	--	--
Indian	134	--	134	620	--	620
Farmer	1,623	280	1,343	5,635	1,181	4,454
Misc. private corporation	98	—	98	282	--	282
Misc. private individual	170	--	170	369	--	369
All owners	2,183	438	1,745	7,291	1,566	5,725

[1/] International 1/4-inch rule.

Table 86.--Output of timber products by product, softwoods and hardwoods, and source of material, Nebraska, 1980

Product and softwoods and hardwoods	Standard units	Total		Roundwood products: Growing stock		Roundwood products: Nongrowing stock		Plant byproducts	
		No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet
SAW LOGS									
Softwood	[1]/Thousand	1,773	313	1,773	313	--	--	--	--
Hardwood	board feet	17,218	2,654	16,881	2,602	337	52	--	--
Total		18,991	2,967	18,654	2,915	337	52	--	--
VENEER LOGS									
Softwood	[1]/Thousand	--	--	--	--	--	--	--	--
Hardwood	board feet	531	112	531	112	--	--	--	--
Total		531	112	531	112	--	--	--	--
COOPERAGE									
Softwood	[1]/Thousand	--	--	--	--	--	--	--	--
Hardwood	board feet	118	20	106	18	12	2	--	--
Total		118	20	106	18	12	2	--	--
FUELWOOD									
Softwood	[2]/Standard	1,115	77	135	9	181	12	799	56
Hardwood	cords	174,604	12,227	73,654	5,158	95,030	6,655	5,920	414
Total		175,719	12,304	73,789	5,167	95,211	6,667	6,719	470
POSTS									
Softwood	Thousand	116	88	79	60	37	28	--	--
Hardwood	pieces	215	121	34	19	181	102	--	--
Total		331	209	113	79	218	130	--	--
PULPWOOD									
Softwood	[2]/Standard	166	12	166	12	--	--	--	--
Hardwood	cords	--	--	--	--	--	--	--	--
Total		166	12	166	12	--	--	--	--
OTHER[3]/									
Softwood	Thousand	159	159	94	94	--	--	65	65
Hardwood	cubic feet	608	608	--	--	--	--	608	608
Total		767	767	94	94	--	--	673	673
ALL PRODUCTS									
Softwood	Thousand	--	649	--	488	--	40	--	121
Hardwood	cubic feet	--	15,742	--	7,909	--	6,811	--	1,022
Total		--	16,391	--	8,397	--	6,851	--	1,143

[1]/International 1/4-inch rule.

[2]/One cord equals 128 cubic feet including wood, bark, and air space.

[3]/Includes cabin logs, livestock bedding, mulch, and specialty items.

Table 87.--Output of roundwood products by product, softwoods and hardwoods, and source of material, Nebraska, 1980

(In thousand cubic feet)

Product and softwoods and hardwoods	All sources	Growing-stock trees			Rough and rotten trees	Salvable dead trees	Other sources
		Total	Sawtimber	Poletimber			
INDUSTRIAL PRODUCTS							
Saw logs							
Softwood	313	313	313	--	--	--	--
Hardwood	2,654	2,602	2,601	1	32	--	20
Subtotal	2,967	2,915	2,914	1	32	--	20
Veneer logs							
Softwood	--	--	--	--	--	--	--
Hardwood	112	112	112	--	--	--	--
Subtotal	112	112	112	--	--	--	--
Cooperage							
Softwood	--	--	--	--	--	--	--
Hardwood	20	18	18	--	2	--	--
Subtotal	20	18	18	--	2	--	--
Posts (Round and split)							
Softwood	88	60	18	42	--	4	24
Hardwood	121	19	14	5	3	--	99
Subtotal	209	79	32	47	3	4	123
Pulpwood							
Softwood	12	12	3	9	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	12	12	3	9	--	--	--
Other							
Softwood	94	94	86	8	--	--	--
Hardwood	--	--	--	--	--	--	--
Subtotal	94	94	86	8	--	--	--
All industrial products							
Softwood	507	479	420	59	--	4	24
Hardwood	2,907	2,751	2,745	6	37	--	119
Total	3,414	3,230	3,165	65	37	4	143
FUELWOOD							
Softwood	21	9	5	4	5	--	7
Hardwood	11,813	5,158	2,844	2,314	2,502	183	3,970
Total	11,834	5,167	2,849	2,318	2,507	183	3,977
ALL PRODUCTS							
Softwood	528	488	425	63	5	4	31
Hardwood	14,720	7,909	5,589	2,320	2,539	183	4,089
Total	15,248	8,397	6,014	2,383	2,544	187	4,120

Table 88.--Timber products from roundwood by species group and product, Nebraska, 1980

Species group	All products	Saw logs		Veneer logs		Fuelwood		Posts		Other[2/]
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Cords	Thousand cubic feet	Thousand pieces	Thousand cubic feet	Thousand cubic feet
Softwoods										
Ponderosa pine	472	1,621	282	--	--	316	21	83	63	106
Eastern redcedar	56	152	31	--	--	--	--	33	25	--
Total	528	1,773	313	--	--	316	21	116	88	106
Hardwoods										
White oak	4,813	430	73	--	--	67,324	4,713	13	7	20
Red oak	527	56	9	--	--	7,280	510	13	8	--
Hickory	354	--	--	--	--	5,061	354	--	--	--
Basswood	54	35	6	--	--	665	48	--	--	--
Soft maple	46	59	9	--	--	506	37	--	--	--
Boxelder	222	--	--	--	--	3,190	222	--	--	--
Elm	593	24	2	--	--	8,434	591	--	--	--
Green ash	1,702	56	8	--	--	24,192	1,694	--	--	--
Cottonwood	3,034	15,420	2,377	433	99	7,934	557	3	1	--
Black willow	881	--	--	--	--	12,560	881	--	--	--
Hackberry	948	23	3	--	--	13,495	944	3	1	--
Black walnut	195	1,097	164	98	13	255	18	--	--	--
Sycamore	121	15	3	--	--	1,687	118	--	--	--
Osage-orange	316	--	--	--	--	3,142	220	166	96	--
Other hardwoods	914	3	3/	--	--	12,959	906	17	8	--
Total	14,720	17,218	2,654	531	112	168,684	11,813	215	121	20
All species	15,248	18,991	2,967	531	112	169,000	11,834	331	209	126

1/ International 1/4-inch rule.

2/ Includes pulpwood, cooperage logs, and cabin logs.

3/ Less than 500 cubic feet.

Table 89.--Volume of primary plant residue by type of use and kind of material, Nebraska, 1980

(In thousand cubic feet)

Type of use	Kind of wood residue							
	Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Fiber products	--	--	--	--	--	--	--	--
Industrial fuel	--	--	--	--	--	--	--	--
Domestic fuel	55.9	414.4	55.9	412.5	--	1.9	34.8	312.2
Miscellaneous[3]	65.1	607.9	22.9	160.5	42.2	447.4	17.0	34.1
Not used[4]	13.5	490.5	6.2	367.6	7.3	122.9	19.4	269.5
All uses	134.5	1,512.8	85.0	940.6	49.5	572.2	71.2	615.8

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, small dimension, charcoal, and specialty items.

[4] Includes residue burned as waste.

Table 90.--All live tree biomass yields on commercial forest land by species group and forest type, Nebraska, 1983

(In pounds per acre green weight)

Species group	Forest type							
	Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods								
Ponderosa pine	100,200	1,345	--	3,098	301	--	1,337	6,033
Eastern redcedar	389	20,927	--	1,803	1,275	2,425	1,819	--
Rocky mountain juniper	--	--	--	--	--	783	--	--
Total	100,589	22,272	--	4,901	1,576	3,208	3,156	6,033
Hardwoods								
White oak	6,016	13,346	39,395	91,863	3,314	--	25,031	--
Red oak	--	1,060	24,169	--	313	--	1,053	--
Hickory	--	--	22,604	2,066	150	--	1,282	--
Basswood	--	1,513	6,986	--	83	--	6,384	--
Soft maple	--	--	--	--	6,530	--	369	--
Boxelder	469	2,241	1,236	1,882	11,278	429	6,129	--
Elm	--	2,048	10,808	340	12,825	2,093	7,931	--
Green ash	599	5,514	5,462	5,536	16,849	4,609	7,441	--
Cottonwood	--	12,523	1,785	294	29,598	122,692	3,768	26,408
Black willow	--	704	--	--	6,734	6,565	316	--
Hackberry	--	1,535	2,676	3,713	2,161	513	22,515	--
Black walnut	--	321	5,270	329	1,942	--	4,654	--
Other hardwoods	--	681	5,185	640	6,983	2,948	8,656	1,419
Noncommercial species	--	660	8,384	--	1,463	385	868	--
Total	7,084	42,146	133,960	106,663	100,223	140,234	96,397	27,827
All species	107,673	64,418	133,960	111,564	101,799	143,442	99,553	33,860

Table 91.--All live tree biomass weight on commercial forest land by species group and forest type, Nebraska, 1983

(In green tons)

County	All types	Forest type							
		Ponderosa pine	Eastern redcedar-hardwood	Oak-hickory	Bur oak	Elm-ash-cottonwood	Cottonwood	Lowland plains hardwoods	Nonstocked
Softwoods									
Ponderosa pine	7,493,871	7,319,631	28,385	--	57,924	18,378	--	51,151	18,402
Eastern redcedar	751,397	28,388	441,569	--	33,716	77,757	100,378	69,589	--
Rocky mountain juniper	32,434	--	--	--	--	--	32,434	--	--
Total	8,277,702	7,348,019	469,954	--	91,640	96,135	132,812	120,740	18,402
Hardwoods									
White oak	4,084,931	439,403	281,595	486,524	1,717,837	202,150	--	957,422	--
Red oak	380,240	--	22,376	298,501	--	19,072	--	40,291	--
Hickory	376,039	--	--	279,162	38,638	9,167	--	49,072	--
Basswood	367,495	--	31,929	86,271	--	5,093	--	244,202	--
Soft maple	412,436	--	--	--	--	398,322	--	14,114	--
Boxelder	1,072,172	34,284	47,284	15,261	35,202	687,944	17,780	234,417	--
Elm	1,355,404	--	43,205	133,476	6,351	782,351	86,647	303,374	--
Green ash	1,834,365	43,787	116,343	67,458	103,527	1,027,806	190,830	284,614	--
Cottonwood	7,401,309	--	264,229	22,042	5,489	1,805,471	5,079,410	144,124	80,544
Black willow	709,528	--	14,858	--	--	410,802	271,795	12,073	--
Hackberry	1,149,056	--	32,382	33,049	69,434	131,802	21,236	861,153	--
Black walnut	374,486	--	6,769	65,088	6,154	118,459	--	178,016	--
Other hardwoods	973,790	--	14,377	64,033	11,972	425,949	122,039	331,093	4,327
Noncommercial species	255,851	--	13,924	103,540	--	89,235	15,948	33,204	--
Total	20,747,102	517,474	889,271	1,654,405	1,994,604	6,113,623	5,805,685	3,687,169	84,871
All species	29,024,804	7,865,493	1,359,225	1,654,405	2,086,244	6,209,758	5,938,497	3,807,909	103,273

Table 92.--All live tree biomass weight on commercial forest land by species group and tree biomass component, Nebraska, 1983

(In green tons)

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
Softwoods						
Ponderosa pine	7,493,871	455,183	4,441,953	1,914,849	518,649	163,237
Eastern redcedar	751,397	369,165	193,225	78,397	90,441	20,169
Rocky mountain juniper	32,434	--	--	--	23,110	9,324
Total	8,277,702	824,348	4,635,178	1,993,246	632,200	192,730
Hardwoods						
White oak	4,084,931	206,659	1,612,445	667,692	1,153,468	444,667
Red oak	380,240	26,438	205,573	86,647	43,536	18,046
Hickory	376,039	94,435	172,615	71,705	26,671	10,613
Basswood	367,495	22,644	177,543	74,005	66,358	26,945
Soft maple	412,436	38,905	168,779	70,095	95,105	39,552
Boxelder	1,072,172	26,769	179,021	73,835	589,705	202,842
Elm	1,355,404	365,497	446,737	183,223	271,703	88,244
Green ash	1,834,365	165,096	839,456	347,322	348,685	133,806
Cottonwood	7,401,309	72,398	4,871,130	2,035,833	313,736	108,212
Black willow	709,528	48,485	399,120	162,153	72,447	27,323
Hackberry	1,149,056	132,470	591,317	241,813	130,700	52,756
Black walnut	374,486	41,055	180,941	74,518	55,679	22,293
Other hardwoods	973,790	135,743	242,034	100,571	362,562	132,880
Noncommercial species	255,851	136,262	--	--	102,025	17,564
Total	20,747,102	1,512,856	10,086,711	4,189,412	3,632,380	1,325,743
All species	29,024,804	2,337,204	14,721,889	6,182,658	4,264,580	1,518,473

Table 93.--Removals,[1/] net annual growth, and inventory of growing stock on commercial forest land, Nebraska, 1983 and low removals option projections[2/] to 2013.

(In million cubic feet)

Year	All species		
	Removals	Growth	Inventory
1983	9.1	11.1	456.0
1993	7.4	12.5	491.2
2003	7.2	13.3	550.2
2013	8.3	13.2	607.5

[1/] Timber removals include volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

[2/] Based on the following assumptions: (a) that the overall removals rate will be lower than that for the high removals option; (b) that the area of commercial forest land will decline but at an insignificant rate; (c) that radial growth will decline over time in relation to increased stand density; (d) that the intensity of forest management practised will continue at the rate indicated by recent trends; and (e) that the volume of "other" removals will drop during the period as more of these trees are utilized.

Table 94.--Removals,[1] net annual growth, and inventory of growing stock on commercial forest land, Nebraska, 1983 and high removals option projections[2] to 2013.

(In million cubic feet)

Year	All species		
	Removals	Growth	Inventory
1983	9.1	11.1	456.0
1993	9.2	12.3	480.8
2003	10.3	13.1	513.5
2013	13.0	12.6	527.4

[1] Timber removals include volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

[2] Based on the following assumptions: (a) that the overall removals rate will be lower than that for the high removals option; (b) that the area of commercial forest land will decline but at an insignificant rate; (c) that radial growth will decline over time in relation to increased stand density; (d) that the intensity of forest management practised will continue at the rate indicated by recent trends; and (e) that the volume of "other" removals will drop during the period as more of these trees are utilized.

Table 95.--Sampling errors[1] for estimates smaller than the State totals of volume, net growth, removals, and area of commercial forest land, Nebraska, 1983

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	Million cubic feet			Million board feet[2]		
1	19,604.1	34,040.3	1,321.1	3,954.3	150,242.7	8,788.4	15,838.9
2	4,901.0	8,510.1	330.3	988.6	37,560.7	2,197.1	3,959.7
3	2,178.2	3,782.3	146.8	439.4	16,693.6	976.5	1,759.9
4	1,225.3	2,127.5	82.6	247.1	9,390.2	549.3	989.9
5	784.2	1,361.6	52.8	158.2	6,009.7	351.5	633.6
10	196.0	340.4	13.2	39.5	1,502.4	87.9	158.4
15	87.1	151.3	5.9	17.6	667.7	39.1	70.4
20	49.0	85.1	3.3	9.9	375.6	22.0	39.6
25	31.4	54.5	2.1	6.3	240.4	14.1	25.3
50	7.8	13.6	0.5	1.6	60.1	3.5	6.3
100	2.0	3.4	0.1	0.4	15.0	0.9	1.6

[1] At the 68-percent probability level.

[2] International 1/4-inch rule.

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Raile, Gerhard K.
Nebraska's second forest inventory. Resour. Bull. NC-96. St. Paul, MN: U.S. Department of Agriculture, north Central Forest Experiment Station: 1986. 87 p.

The second inventory of the timber resource of Nebraska shows a 25-percent decline in commercial forest area and a 23-percent gain in growing-stock volume between 1955 and 1983. Text and statistics are presented on area, volume, growth, mortality, removals, utilization, biomass, and future timber supply.

KEY WORDS: Area, volume, growth, mortality, removals.

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United States Department of Agriculture

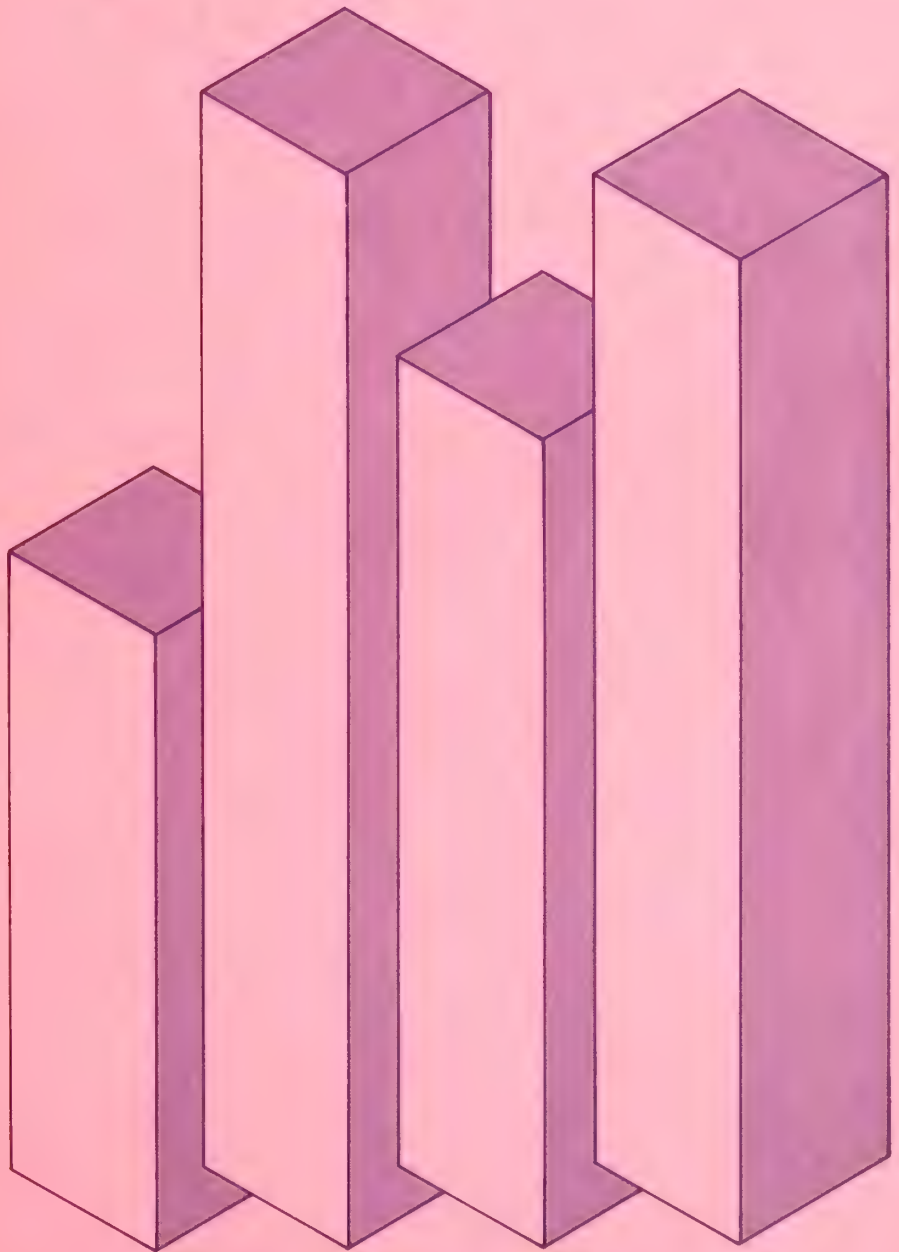
Forest Service

North Central Forest Experiment Station

Resource Bulletin **NC-97**

Wisconsin's Fourth Forest Inventory: Area

W. Brad Smith



Smith, W. Brad
Wisconsin's fourth forest inventory: area. Resour. Bull. NC-97. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1986. 48 p.

In 1983, the fourth Wisconsin forest inventory found 14.8 million acres of commercial forest land, an increase of nearly 2 percent since 1968. This bulletin analyzes findings from the inventory and presents detailed tables of forest area.

KEY WORDS: Forest area, commercial forest area, forest inventory, land use.

North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
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FOREWORD

Forest Inventory and Analysis (FIA) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974, which was preceded by the McSweeney-McNary Forest Research Act of 1928. The objective of FIA is to periodically inventory the Nation's forest land to determine its extent, condition, and volume of timber, growth, and depletions. Up-to-date resource information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Inventory and Analysis work done in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Fieldwork for the 1983 Wisconsin forest inventory was begun in the summer of 1981 and completed in late 1983. Reports on the three previous surveys of Wisconsin's timber resource are dated 1936, 1956, and 1968. Resource Bulletins reporting statistical highlights and detailed tables of the five Survey Units in Wisconsin are available. In addition to these statistical reports, a series of analytical reports are also available.

More accurate survey information was obtained during the 1983 survey than otherwise would have been feasible because of intensified field sampling. Such sampling was made possible by additional funding and field personnel provided the North Central Station by the Wisconsin State Legislature through the Department of Natural Resources. Data from the Department's canvass of all primary wood-using plants in the State were used to help estimate the quantity of timber products harvested in Wisconsin.

Aerial photos used in the Wisconsin Forest Inventory were furnished by the Wisconsin Department of Natural Resources, the USDA Agricultural Stabilization and Conservation Service, and the national forests.

The following State organizations and personnel were instrumental in the preparation of this manuscript:

Wisconsin Department of Natural Resources
- Richard Lindberg, Forest Management Planning and Analysis
- Jim Whipple, Marketing and Utilization
- Art Doll, Recreation Policy and Procedures
- Frank Haberland, Forest Wildlife
- Lee Kernen, Fisheries
- Ron Nicotera, Endangered Resources
- Gordon Reinke, Mining
- David Weizenicker, Parks and Recreation

Wisconsin Department of Development
- Roger Nacker, Economic Development

University of Wisconsin System
- Ron Geise, Forestry Education
- Jeff Stier, Extension Forestry

HIGHLIGHTS

- Forest land increased from 14.9 to 15.4 million acres between 1968 and 1983.
- Commercial forest land climbed from 14.5 to 14.8 million acres during the same 15-year period, a gain of nearly 2 percent.
- Greatest proportional gain of commercial forest was in the Southwest Inventory Unit (31 percent), primarily from the reversion of wooded pasture.
- Noncommercial forest area increased from 409,000 to 592,000 acres between surveys, mostly from a sevenfold increase of productive-reserved forest area.
- Ninety-four percent of the land area classified as commercial forest land in 1968 is still commercial forest.
- Wind, fire, insects, and other natural causes have damaged more than 566,000 acres of commercial forest land since 1964.
- Nonindustrial private parties own 62 percent of the total commercial forest area.
- Eighty-seven percent of the commercial forest owned by nonindustrial private parties is in tracts larger than 20 acres.
- More than one-half of the nonindustrial private forest land has been owned by the same party for at least 10 years.
- At 2.2 million acres, Wisconsin ranks second only to Minnesota in total acres of commercial forest in county and municipal ownership.
- The aspen forest type continues to lose acreage with a decline of more than 400,000 acres since 1968.
- Poletimber stands account for 49 percent of the commercial forest in the northern two units, while sawtimber stands comprise 42 percent of the south.
- Forest plantations totaled 622,000 acres in 1983, 58 percent in stands less than 30 years old.
- Average site index is 64 feet, compared to a Lake States average of 60 feet.
- Eighty-one percent of the commercial forest is medium-stocked or better with trees.
- Fifty percent of the commercial forest land is within one-fourth mile of a maintained road.

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WISCONSIN'S FOURTH FOREST INVENTORY: AREA

W. Brad Smith, *Mensurationist*

HISTORICAL PERSPECTIVE

Exploration, Exploitation, Revitalization[1]

When explored by Jean Nicolet in 1634, Wisconsin was a vast forest wilderness inhabited by tribes of Indians who depended mainly on hunting, fishing, gathering wild rice, and growing small areas of corn for their livelihood. Forests covered 30 million of the 35 million acres defined by the current State boundaries. In the 200 years that followed Nicolet's first visit, little happened to disturb the vegetation he saw (fig. 1). From the pineries in the north to the oak savannahs in the south, events moved at a glacial pace. The only hints of coming change were the intrusion of fur traders and an occasional missionary.

The traffic in furs opened the first trade routes, but brought only small settlements predominantly along the major waterways. The discovery of lead in the southwestern part of the State in about 1820 brought many more settlers. Agricultural development followed but did not grow to a large scale until

[1]*Background material for the introductory text is based upon a 1956 Department of Natural Resources staff report on the history of forestry in Wisconsin.*

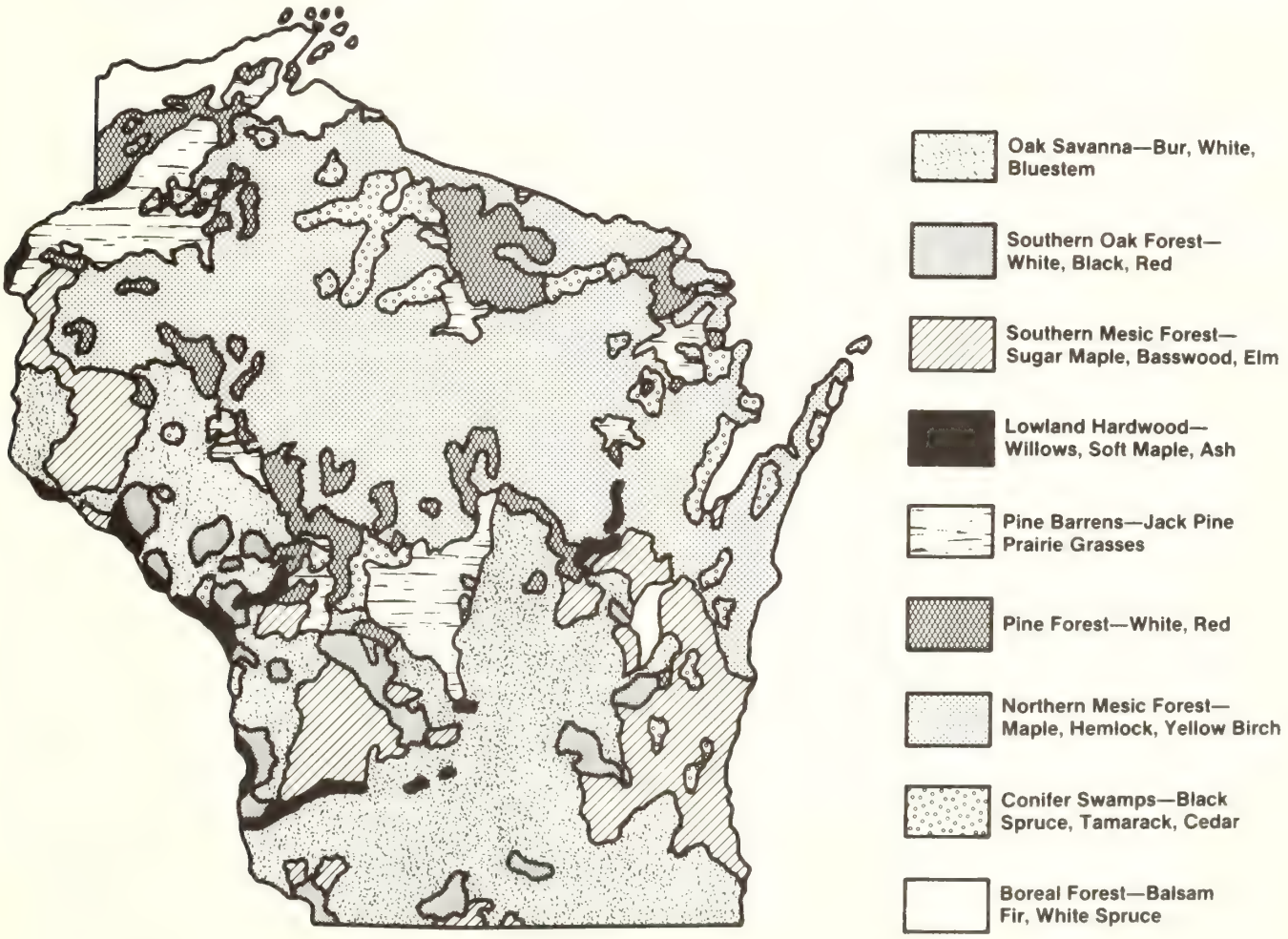
Oak Savanna—Bur, White, Bluestem
Southern Oak Forest—White, Black, Red
Southern Mesic Forest—Sugar Maple, Basswood, Elm
Lowland Hardwood—Willows, Soft Maple, Ash
Pine Barrens—Jack Pine Prairie Grasses
Pine Forest—White, Red
Northern Mesic Forest—Maple, Hemlock, Yellow Birch
Conifer Swamps—Black Spruce, Tamarack, Cedar
Boreal Forest—Balsam Fir, White Spruce

Figure 1.—*Early forest vegetation of Wisconsin.*

Figure 2.—*Deforested pine land in northern Wisconsin. Scattered jack pine reproduction may be seen in the background.*

the close of the Blackhawk War in 1832. From then on a steady stream of immigrants poured into the State. The pioneer farmers found trees an obstacle to clearing the land but a necessity to building their homes, barns, and first crude implements. The major assault on the forests of northern Wisconsin began shortly after the close of the Civil War. By 1870, Wisconsin mills were producing more than a billion board feet of lumber annually, and the demand for wood seemed insatiable. Steam replaced water-power, and bigger and faster mills with more efficient bandsaws were built. With ample timber for ties, bridges and fuelwood for the locomotives, logging railroads superceded the sleigh haul and river drive for transporting logs. By 1899, Wisconsin was leading the world in lumber production, sawing 3.5 billion board feet annually. The forests of Wisconsin had not only provided a wealth of lumber to the wood-starved prairies, but built the cities and transportation system of the State as well. The so-called inexhaustible forests, which most said were sufficient to supply the world for 100 years, almost disappeared in half that time (fig. 2).

Indeed, by the turn of the century, the face of the once magnificent Wisconsin forest had changed dramatically, but the bleakest days were yet to come. It was assumed that the plow would follow the ax in northern Wisconsin as it had in the south, but settlement could not keep up with the hell-bent pace of the logging companies and a bustling nation's demand for more wood. The forest was decimated and the northern land was a poor substitute for the rich agricultural land farther south.

By 1939, lumber production had dropped to one tenth of what it had been in 1899. The land was cut over and repeatedly burned over; a staggering amount was tax delinquent. The human despair of the Great Depression was perhaps a fitting culmination of what had happened to the Wisconsin landscape. The future could only be brighter. Out of the depression came federal work programs such as the Civilian Conservation Corps and the Work Projects Administration that would do much to heal the scarred land and greatly stimulate forestry work in the State.

Sound legislation, stable policies, consistent financial support, progressive leadership, and an enlightened citizenry have all contributed to the resurgence of the State's forests during the last half century. Many individuals, organizations, industries, public agencies, and educational institutions have made important contributions in this development. With few exceptions, like the Menominee Indian Reservation (fig. 3), Wisconsin's post-settlement forestry practices were not a monument to sound forest management, but today, the people of the State can be proud of their revitalized forests.

Figure 3.—*Old growth white pine on the Menominee Reservation.*

The information in this report is testimony that the efforts to rebuild and use the forest resources of Wisconsin wisely have been very successful.

FOREST AREA CLIMBS

Forest land, representing 44 percent of Wisconsin's land area, climbed from 14.9 to 15.4 million acres between 1968 and 1983. This 2.7-percent rise averages out to a gain of 27,000 acres per year. This increase is unique at a time when agricultural expansion and urbanization are swallowing up large quantities of forest land in other States. Wisconsin and Kansas are the only two States in the North Central Region to gain forest land in the last 15 years.

Commercial forest land, which accounts for 96 percent of the total forest land, rose from 14.5 to 14.8 million acres between 1968 and 1983, an increase of 1.5 percent. The average yearly gain was 15,000 acres during the 15 years between surveys. The annual rate of change, then, was (+) 0.1-percent compared to (−) 0.7-percent in Minnesota and (−) 0.5-percent in Michigan from the most recent inventories of the latter two States.

Table 1.-- Area of commercial forest land, Wisconsin, 1968 and 1983, and percent change between surveys

(In thousand acres)

Survey Unit	1968	1983	Percent change
Northeast Unit	4,062.0	3,828.5	(-) 5.8
Northwest Unit	5,246.4	5,150.8	(-) 1.8
Central Unit	2,831.8	2,950.9	(+) 4.2
Southwest Unit	1,493.1	1,920.0	(+) 28.6
Southeast Unit	903.5	909.2	(+) 0.6
All Units	14,536.8	14,759.4	(+) 1.5

The change in commercial forest land differed widely by Survey Unit (table 1). The Northeast and Northwest Units jointly showed a 3.5-percent decline in commercial forest area; the Central, Southwest, and Southeast Units jointly showed a 10.6-percent increase. Much of the decline in the north is attributable to the sharp increase in productive-reserved forest land, and much of the gain in the south stems from the reversion of wooded pasture to commercial forest land because of improved stocking levels on previously grazed land. Thus, to some extent, the increase in commercial forest land in Wisconsin is more the result of a deteriorating farm economy than an influx of young new forests. Agricultural statistics reported for Wisconsin for 1982 indicate that the number of cattle and dairy farms have declined almost 20 percent since 1973.[2]

The distribution of commercial forest by county shows the highest concentration in the northern two units, where commercial forests grow on 66 percent of the land area compared to 27 percent in the southern three units. The most heavily forested counties, all in the north, are Menominee (93 percent), Ashland (85), Forest (84), Bayfield and Iron (83), and Florence (82). The least heavily forested counties are generally found in the southern units (fig. 4). Most of these lightly forested counties are in portions of the State where the pre-settlement vegetation was dominated by prairie.

WILD AREAS SHOW SIGNIFICANT GAINS

Noncommercial forest land jumped from 409,000 to 592,000 acres between 1968 and 1983, a gain of 45 percent. Most of this increase was due to the 663-

[2]*Source: 1982 Wisconsin Agricultural Statistics, Wisconsin Department of Agriculture, Trade, and Consumer Protection.*

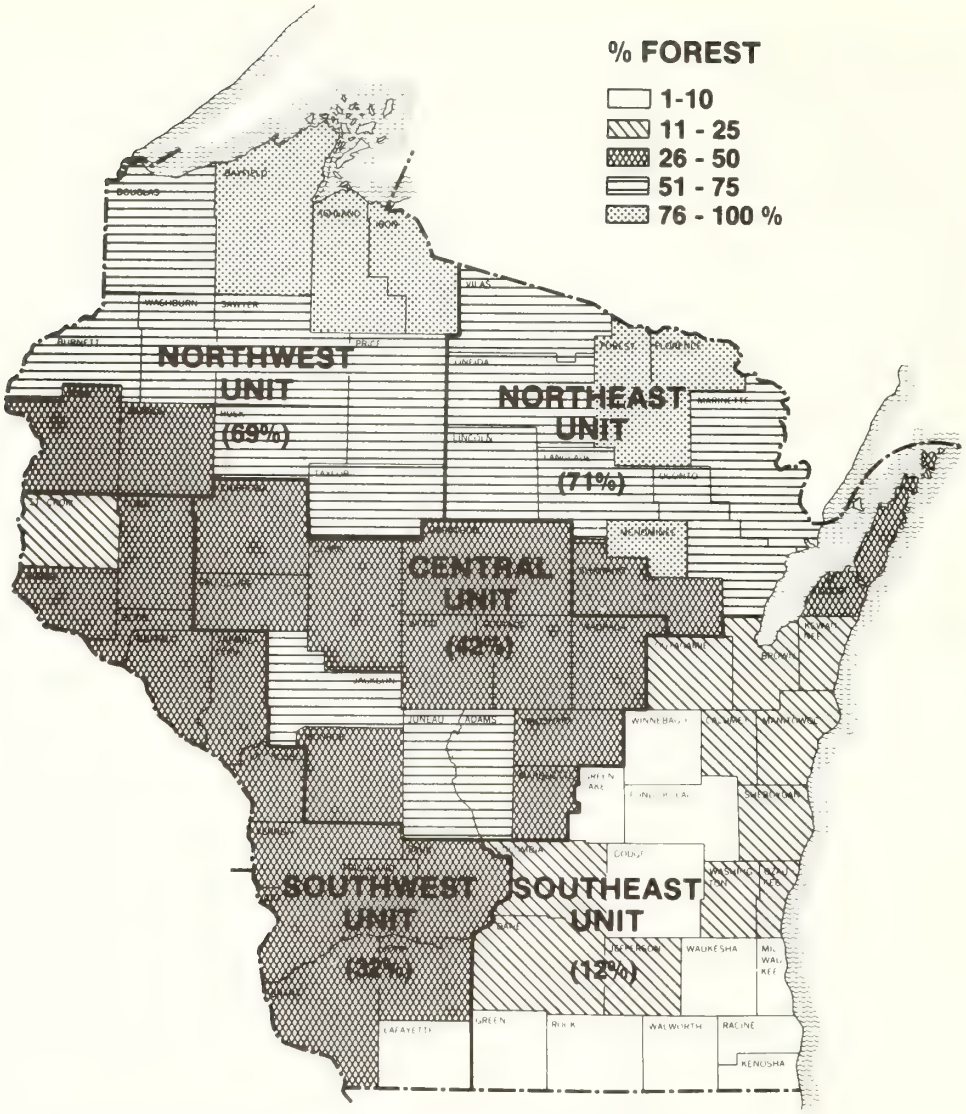

Figure 4.—*Wisconsin Forest Survey Units and percent forest cover by county, 1983.*

percent increase of productive-reserved forest land, from 34,000 to 261,000 acres. The new productive-reserved areas consist of scattered tracts throughout the State and include Rainbow Lake and Flambeau River Wilderness areas on the Chequamegon National Forest, Blackjack Springs, Whisker Lake and Headwaters Wilderness Areas on the Nicolet National Forest, the Apostle Islands National Lakeshore in Bayfield County, and the St. Croix Wild and Scenic Riverway corridor.

State-owned reserved areas include wild areas in Buckhorn and Copper Falls State Parks and the St. Croix and Brule State Forests as well as many other smaller parcels set aside since the last inventory, including small tracts purchased or leased by the State for recreation or wildlife management. Most of the larger areas were classed as commercial forest before they were designated as places where timber harvesting would be precluded and, therefore, they represent much of the reason for the commercial forest decline in the northern units between surveys.

Unproductive forest land, that incapable of growing crops of industrial wood because of adverse site conditions, declined between surveys, from 374,000 to 331,000 acres. Much of this change was the result of unproductive forest land being included in newly designated reserved areas.

MOST FOREST LAND UNCHANGED

The remeasurement of plots established during the 1968 inventory permitted an overview of land use changes on land classified as commercial forest

15 years ago. Analysis of the plots showed that 94 percent of them remained commercial forest land in 1983. Of the plots that changed land use, one-third were converted to water or marsh, often the result of beaver activity, and one-third were converted to the urban and related classification as shown in the following tabulation:

1983 land use class	Percent of remeasured commercial forest plots by land use class in 1983
Commercial forest	94.0
Urban and related	1.9
Water and marsh	1.9
Cropland	0.7
Productive-reserved forest	0.8
Unproductive forest	0.2
Pasture and range	0.5
Total	100.0

The above data refer only to land classified as commercial forest during the 1968 survey. There have also been additions to the commercial forest land base from land previously classified as noncommercial forest or nonforest. The wooded pasture situation in southwest Wisconsin described earlier is one example. Another example is the nonforest land planted to conifer plantations, an estimated 127,000 acres in the State since 1968.

EXTENSIVE ACREAGE SUFFERS DAMAGE

As they remeasure field plots, our survey crews gather information about human-caused disturbance or improvement to the timber stand in the last 20 years. They also record any damage (natural or human-caused) to the stand. The estimate of stand history that results from this information is useful in gauging the condition and utilization of the State's commercial forest.

Observable damage was recorded on 653,000 acres of commercial forest land. Most of this damage (87 percent) was due to natural causes such as disease (Dutch elm, blister rust, cankers, etc.), wind, fire (natural, accidental, or arson), and insects (budworms, borers, etc.). Although most forest fires are caused by human activity, they are classed as natural damage because less than 10 percent are deliberately set and the field crew does not attempt to determine those set. Blowdowns are also a normal occurrence in the forests of Wisconsin. The major "downburst" of July 4, 1977, in northern Wisconsin and Minnesota that claimed more than 40,000 acres of forest land was a severe example of a routine natural event in the State's forest history. Thirteen percent (87,000 acres) of the observed damage was the result of human activities such as spraying, draining, or flooding. This latter group of activities is generally the result of deliberate changes in land use management.

Between 1964 and 1983, 80 percent of the commercial forest (11.8 million acres) was undisturbed by man and suffered no major damage (table 2). The changes that did occur in this area were the result of natural processes.

Since 1964, 1.7 million acres have been harvested, 12 percent of the commercial forest. Partial cutting was observed on 72 percent of the harvested area, and clearcutting accounted for the remaining 28 percent. Although forest industry and county lands make up only 8 and 15 percent of the commercial

Table 2.--Area of commercial forest land by treatment class or damage and ownership class, Wisconsin, 1968-1983

(In thousand acres)

Treatment or damage class	Ownership class							
	All owners	Federal	State	County and municipal	Indian	Forest industry	Farmer	Misc. private
No disturbance	11,825.1	1,095.7	455.6	1,747.8	293.1	846.8	2,760.4	4,625.7
Timber stand improvement	135.3	40.9	6.2	9.0	3.6	14.4	18.6	42.6
Harvest								
Clearcut	470.6	74.3	28.3	152.4	8.8	86.8	27.3	92.7
Partial cut	1,232.2	100.4	23.4	171.5	27.0	130.6	343.2	436.1
Damage								
Natural	566.5	66.5	37.9	72.2	21.2	51.2	140.6	176.9
Human caused	86.7	1.9	6.0	6.2	--	5.3	36.0	31.3
Artificial regeneration of forest land	66.4	21.6	7.6	10.8	--	13.4	2.2	10.8
Artificial regeneration of nonforest land	60.2	10.3	--	1.8	--	5.2	7.1	35.8
Natural regeneration of nonforest land	316.4	6.9	4.4	8.1	--	2.3	178.3	116.4
All treatments	14,759.4	1,418.5	569.4	2,179.8	353.7	1,156.0	3,513.7	5,568.3

forest, respectively, these lands accounted for 13 and 19 percent of the acres harvested by all owners. Federal, State, and Indian lands had harvesting activity roughly proportional to their share of the commercial forest land base. Nonindustrial private owners were the only group to have less than their proportional share of harvesting activity.

The next most extensive treatment was timber stand improvement, performed on 0.1 million acres, 1 percent of the total commercial area. This work (mostly thinnings) was done fairly equally on both public and private forest land.

Tree planting occurred on 127,000 acres, 1 percent of the total area. About one-half of the tree planting was done on land that was nonforest during the last 20 years. Again, public and private land received the benefits of this treatment equally.

MOST COMMERCIAL FOREST LAND IN NONINDUSTRIAL PRIVATE OWNERSHIP

Private parties (other than farmers) own the largest share of the State's commercial forest, 5.6 million acres or 38 percent of the total. When combined with the 3.5 million acres owned by farmers (24 percent of the total), the resulting 9.1 million acres of nonindustrial private-owned commercial forest represents more than half of Wisconsin's total (fig. 5). Nonindustrial private owners are a diverse

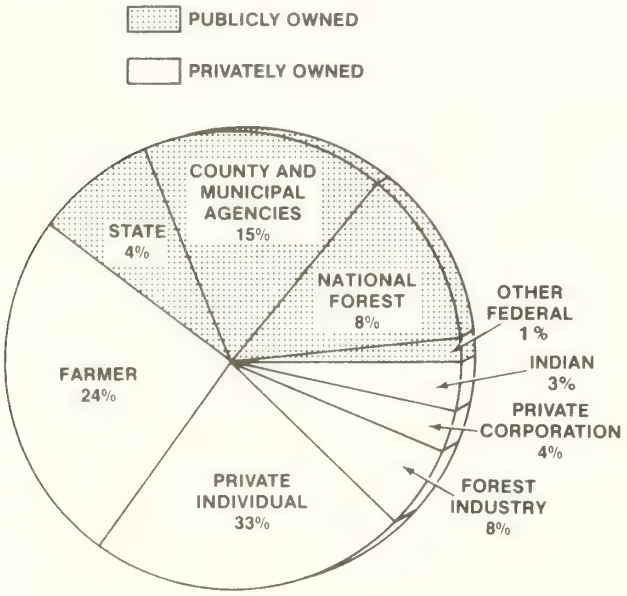

Figure 5.—*Area of commercial forest land by ownership class, Wisconsin, 1983.*

group, representing many persons with contrasting backgrounds, goals, and management strategies. The fact that this group owns 62 percent of the commercial forest and accounts for 58 percent of the acreage of management activity in the last 20 years certainly indicates that forest management opportunities are not unknown to Wisconsin's private landowners.

Nonindustrial private parties own similar acreages in the combined northern two units (4.2 million acres) and in the south (4.8 million acres). There is a sharp contrast, however, in how these areas compare to total forest land in their respective regions. Nonindustrial private owners control 84 percent of the commercial forest land in the southern units compared to only 47 percent in the north.

Fifty-nine percent of the nonindustrial private forest land is owned by parties with at least 50 acres of commercial forest land. Another 28 percent is owned by parties with 21 to 50 acres as shown in the following tabulation. These areas represent the total area owned by an individual, and may include one or more non-contiguous tracts.

Size of holding	Area owned by nonindustrial private parties	
(Acres)	(Thousand acres)	(Cumulative percent)
5,001+	119.0	1
2,501-5,000	49.7	2
501-2,500	333.9	6
101-500	2,569.0	34
51-100	2,265.2	59
21-50	2,565.3	87
11-20	683.9	95
5-10	316.0	98
1-4	180.0	100
Total	9,082.0	

More than half of the nonindustrial private forest land has been owned by the same party for 10 years or more:

Owner tenure	Area owned by nonindustrial private parties	
(Years)	(Thousand acres)	(Cumulative percent)
20+	2,333.4	26
10-19	2,731.3	56
5-9	1,976.7	78
1-4	2,040.6	100
Total	9,082.0	

COUNTY AND LOCAL GOVERNMENTS OWN 15 PERCENT OF COMMERCIAL FOREST

Wisconsin's county and local governments own 2.2 million acres of commercial forest, half of which is in the Northwest Unit. The Forest Crop Law and the County Forest Reserve Law, enacted in the late 1920's, allowed for the establishment of county forests to deal with the critical problem of tax delinquent, cut-over, and burned land. Nearly 90 percent of the county forest acreage in the State was acquired between 1930 and 1933. The largest county forest is in Douglas County (226,000 acres), and the smallest is in Monroe County (about 7,000 acres). In the Nation, Wisconsin ranks second only to Minnesota in total acres of commercial forest land in county ownership.

The Nicolet and Chequamegon National Forests, established in 1928 and 1933, respectively, comprise 1.2 million acres (8 percent) of commercial forest and owe much of their beginnings to the same conditions that gave birth to the county forests. All the national forest land is in the northern two units. State forests comprise 0.6 million acres (4 percent). Wisconsin has the lowest acreage of State-owned forest land in the Lake States[3]; Minnesota has 2.7 million acres and Michigan has 3.6 million acres of commercial forest land in State ownership.

Industry also holds 1.2 million acres of commercial forest with 88 percent of this land in the northern units. Practically all (93 percent) forest industry land is owned by companies with holdings of more than 5,000 acres. Fifty-three percent of forest industry land has been held by the same owner for at least 20 years. Another 29 percent has been held for at least 10 years.

The remaining 0.5 million acres of commercial forest are in miscellaneous federal agency and Indian ownership (accounting for 1 and 2 percent, respectively).

MAPLE-BIRCH AND OAK-HICKORY TYPES GAIN REGIONALLY

Maple-birch stands are increasing their dominance in Wisconsin's forests. The 4.0 million acres in the maple-birch forest type in 1983 represent 27 percent of the commercial forest, compared to the 3.5 million acres in 1968 comprising 24 percent of the total. The maple-birch type is most extensive in the northern two units where it amounts to nearly one-third of the region's commercial forest area. This increase is expected to continue as older aspen and birch stands mature and succeed to northern hardwoods. In the southern units, 2.3 million acres of oak-hickory represent the dominant forest type accounting for 40 percent of commercial forest area in that region, a 7-percent increase since 1968.

Twice as many forest types gained area between surveys as did types that lost area, as seen in table 3. The largest area increase was the 475,000 acres gained by the maple-birch type, but the greatest proportional increase was the 54-percent jump made by the red pine type. Other large gains occurred in oak-hickory (194,000 acres) and paper birch (87,000 acres). The largest area loss was the 403,000-acre decline registered by the aspen type. However, the 57-percent reduction in nonstocked area between surveys was the highest proportional loss. Other large losses were taken by the jack pine type (181,000 acres) and balsam fir (133,000 acres).

A few examples will help explain how to use table 3. If you wish to know what became of the 727,600 acres of jack pine found during the 1968 survey, simply read across the jack pine row in table 3 and observe that 433,400 acres are still jack pine, 41,000 acres are now typed red pine, 126,900 acres are typed oak-hickory, 70,000 acres are now aspen type, 5,900 acres are nonstocked, and 50,400 acres are no longer commercial forest. To determine the source of the current jack pine acreage, read down the jack pine column. This shows that 433,400 acres of jack pine have been retained in the type, 8,900 of the current jack pine acreage came from the red pine type, 5,400 acres from the tamarack type, 33,400 acres from the aspen type, 65,400 acres came from land that was not classified as commercial forest in 1968, and the current total acreage of jack pine type is 546,500 acres. The change recorded for jack pine was a decline from 727,600 acres to 546,500 acres or a 24.9-percent loss.

ASPEN ACREAGE CONTINUES TO DECLINE

The second largest forest type Statewide is aspen with 3.3 million acres or 22 percent of the total commercial area. Unlike the maple-birch type, the aspen type declined in area between inventories—from 3.7 million acres in 1968. Aspen is a pioneer species, and stands that are predominantly aspen live about 40 to

[3]*The Lake States Region includes Michigan, Wisconsin, and Minnesota in this report.*

Table 3.-- Forest land classification changes in Wisconsin, 1968-1983

(In thousand acres)

1968 land classification	1968[2] area	1983 land classification[1]															
		Commercial forest land - forest type											Noncommercial forest and nonforest land				
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash soft maple	Maple-birch	Aspen	Paper birch	Exotic	Non-stocked	
Commercial Forest																	
Jack pine	727.6	433.4	41.0	--	--	--	--	--	--	126.9	--	--	70.0	--	--	5.9	50.4
Red pine	310.2	8.9	256.5	22.4	--	--	--	--	--	1.3	--	--	13.7	--	--	--	7.4
White pine	177.6	--	7.7	122.5	--	--	--	--	--	7.9	7.6	25.0	--	--	--	--	6.9
Spruce-fir	628.0	--	8.2	--	296.2	34.3	8.8	40.8	--	--	23.8	60.9	113.2	19.4	--	--	22.4
Black spruce	235.9	--	--	5.4	11.7	--	177.0	5.6	17.4	--	5.8	--	--	--	--	--	13.0
Northern white-cedar	302.4	--	--	--	23.1	--	6.3	207.0	--	--	29.5	7.2	--	12.8	--	--	16.5
Tamarack	222.2	5.4	--	--	10.7	7.8	9.4	--	177.4	--	5.5	--	--	--	--	--	6.0
Oak-hickory	2,664.9	--	27.0	--	--	--	--	--	--	1,959.3	25.7	327.7	118.4	24.6	--	--	182.2
Elm-ash-soft maple	1,157.6	--	--	--	13.6	--	--	22.8	--	20.3	699.8	182.5	68.2	21.1	--	8.1	121.2
Maple-birch	3,521.5	--	--	21.5	7.6	--	7.0	11.2	--	158.3	161.6	2,870.7	160.7	14.8	--	--	108.1
Aspen	3,664.6	33.4	49.9	38.1	48.2	--	13.3	--	7.8	123.0	137.3	367.1	2,521.4	102.3	--	25.3	197.5
Paper birch	554.5	--	7.8	--	8.2	--	--	9.0	7.7	33.0	34.1	92.5	59.9	285.4	--	--	16.9
Nonstocked	369.7	--	--	8.3	--	--	--	--	--	103.2	27.5	62.4	17.4	8.3	--	17.2	125.4
Noncommercial forest and nonforest land	20,296.1	65.4	80.1	7.4	0.1	19.3	51.2	74.3	12.4	325.5	82.4	.9	118.6	152.9	2.2	103.9	19,199.5
All land classes	34,832.8	546.5	478.2	225.6	419.4	61.4	273.0	370.7	222.7	2,858.7	1,240.6	3,996.9	3,261.5	641.6	2.2	160.4	20,073.4
Percent net change (1968-1983)		(-24.9)	(+54.2)	(+26.8)	(-23.4)		(+15.7)	(+22.6)	(0.0)	(+7.2)	(+7.2)	(+13.2)	(-11.0)	(+15.7)	(--)	(-56.6)	(-1.0)

[1] Read across rows to determine dispersion of 1968 classes to 1983 classes. Read down columns to determine origin of 1983 classes.

[2] Total land area adjusted to conform to 1980 census figures.

60 years before beginning to deteriorate and to be replaced by a new stand, not always aspen. Therefore, aspen stands older than 60 years are prime candidates for conversion to other types, especially those with understories that are not aspen. In Wisconsin, 268,000 acres of the aspen type (8 per cent of the type area) are more than 60 years old.

Much of the gain of the maple-birch type from 1968 to 1983 came at the expense of the aspen type as mature aspen stands gave way to their more tolerant understories, some of which were made up of species associated with the maple-birch type.

More than one-fourth of the aspen type (861,000 acres) also supports a natural coniferous understory. If these stands are not managed to favor aspen in the future, some of them will convert to a conifer type, primarily balsam fir. Clearcutting aspen tends to bring about pure aspen stands on the same site. As more aspen stands are harvested, the steady decline of area in the aspen type between 1936 and 1983 may slow and reverse. The large acreage in stands aged 1-20 years (1.1 million acres) suggests that this process may have begun.

The aspen type is most widespread in the northern two units where it comprises 28 percent of the forest area.

Survey year	Area of aspen type (Thousand acres)
1936[4]	5,117
1956[4]	4,161
1968	3,665
1983	3,262

POLETIMBER AND SAWTIMBER DOMINATE REGIONALLY

The distribution of timber by stand-size class is not uniform throughout the State. In the northern two units 4.4 million acres (49 percent) of the stands are poletimber, while in the south 2.4 million acres (42 percent) of the stands are in the sawtimber size class.

Poletimber stands in Wisconsin account for the largest area by stand-size class—6.2 million acres or 42 percent of the total. This compares to a national average for the proportion of poletimber stands of 38 percent. The Lake States is the only region of the country where sawtimber stands do not predominate. This reflects the continual rebuilding and maturation of stands from the cutover and burned over conditions in the late 19th and early 20th centuries. It also reflects the domination of pole and small sawtimber size material for timber products as the primary objective of management on several million acres of forest land.

Sawtimber stands make up 32 percent of the State's commercial forest area, more than in the other two Lake States, but substantially lower than the national average of 45 percent. In 1968 sawtimber stands represented 21 percent of the State total (fig. 6).

The largest area of sawtimber stands is in the maple-birch and oak-hickory forest types (1.5 million acres each), but the highest proportion within any forest type is 70 percent in the white pine type.

OAK-HICKORY AND JACK PINE ON WIDEST RANGE OF SITES

Although not the most abundant type in Wisconsin, jack pine is one of the most likely forest types to be found across the entire range of physiographic classes. Physiographic class is a measure of soil and water conditions on a site that affect tree growth. The five classes are a continuum, ranging from exceptionally wet sites (hydric) to very dry sites (xeric). Jack pine, which tends to be a dry site type, was found on 156,500 acres of mesic to hydric sites. This constitutes 29 percent of the total jack pine type found in the recent inventory. Oak-hickory, also generally considered a dry site type, was found on 97,300 acres of hydromesic and hydric sites (3 percent of the total oak-hickory type). Bur oak was the dominant species on the latter sites along with elm and red maple.

The mid-point of the physiographic classes contains sites where conditions are most favorable for growth for most species (mesic). Sixty-five percent of Wisconsin's commercial forest land occupies mesic sites, including 92 percent of the maple-birch type, at least 75 percent of the oak-hickory and paper birch types, and more than 70 percent of the white spruce, aspen, and white pine types.

In general, forest types found on drier sites in Wisconsin are jack pine, red pine, upland oak-hickory, and exotic conifers. Wet site types include black spruce, northern white-cedar, tamarack, and elm-ash-soft maple. Figure 7 shows the distribution of

[4]*Estimated from inventory data for combined aspen-birch type.*

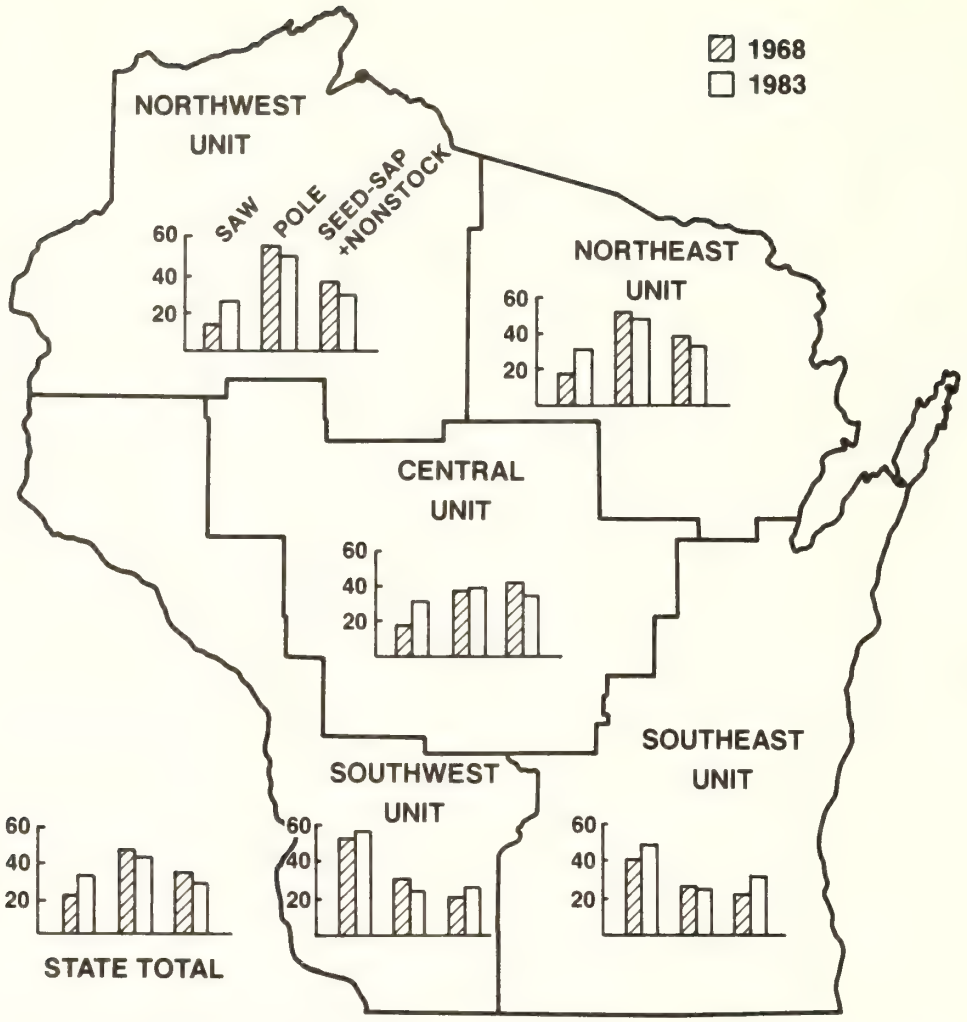

Figure 6.—*Distribution of commercial forest land by Survey Unit, survey year, and stand-size class.*

acreage within each forest type by physiographic class.

AVERAGE SITE INDEX IS 64 FEET

Site index provides another perspective of forest site quality by classifying forest land in terms of the height growth made by dominant or codominant trees of selected species at 50 years of age. Eighty-four percent of the State's commercial forest (12.4 million acres) grows trees taller than 51 feet at age 50, and 11 percent of the total area grows trees taller than 81 feet (fig. 8). Site index values fluctuate by forest type. A site index in the high range for one type may be considered average for another type. If a forest type is converted to another type, the new site index for that site may bear little resemblance to the old one.

The weighted average site index for all types in Wisconsin is 64 feet, compared to the Lake States average[5] of 60 feet. The highest weighted average of any forest type in the State is 70 feet for the aspen type, followed by red pine (69 feet), maple-birch (67 feet), paper birch (66 feet), white pine (64 feet), oak-hickory (63 feet), jack pine and white spruce (62 feet), and elm-ash-soft maple (61 feet). The lowest average is 39 feet for the northern white-cedar and black spruce types.

SITE CLASS—ANOTHER WAY OF LOOKING AT SITE QUALITY

Another indicator by which the quality of a forest site can be judged is site class. Site class is a means

[5]*Based on 1983 data for Wisconsin, 1980 data for Michigan, and 1977 data for Minnesota.*

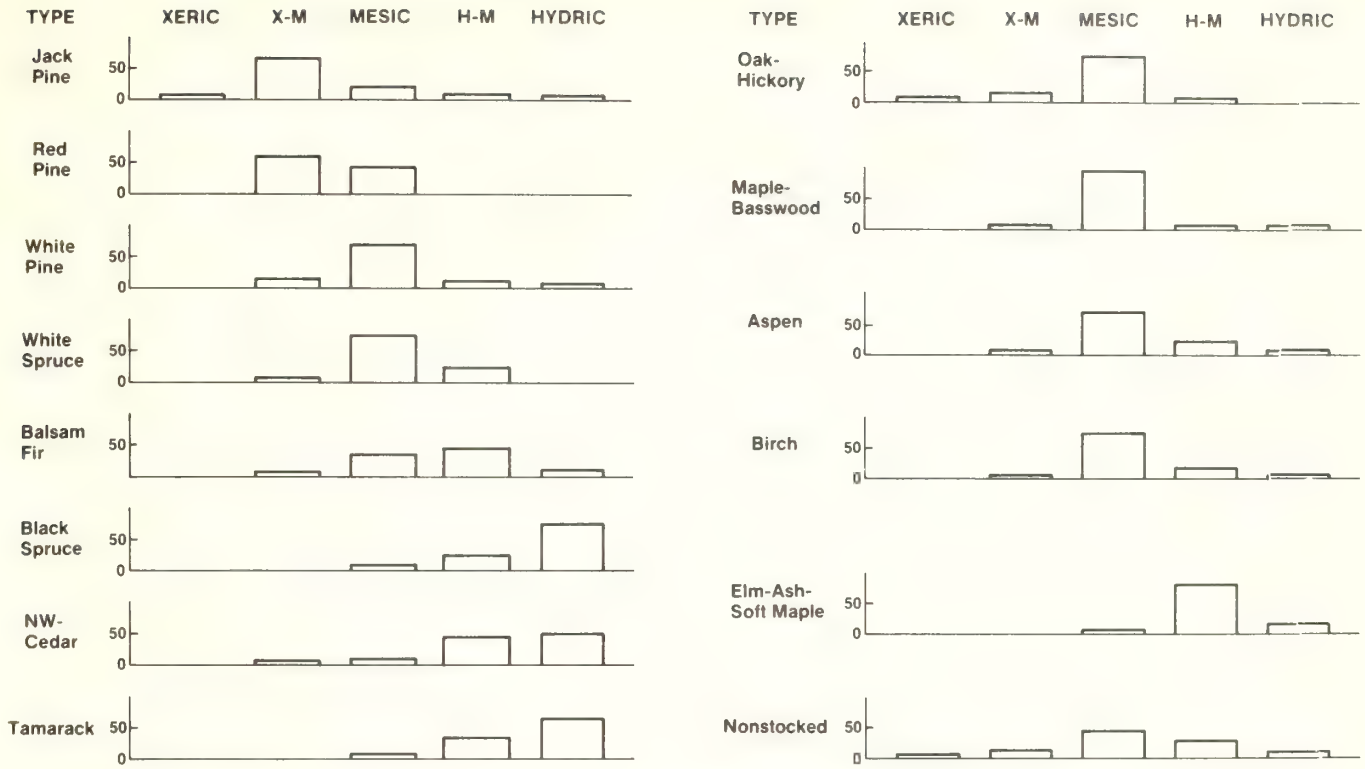

Figure 7.—*Distribution of commercial forest land by forest type and physiographic class, Wisconsin, 1983.*

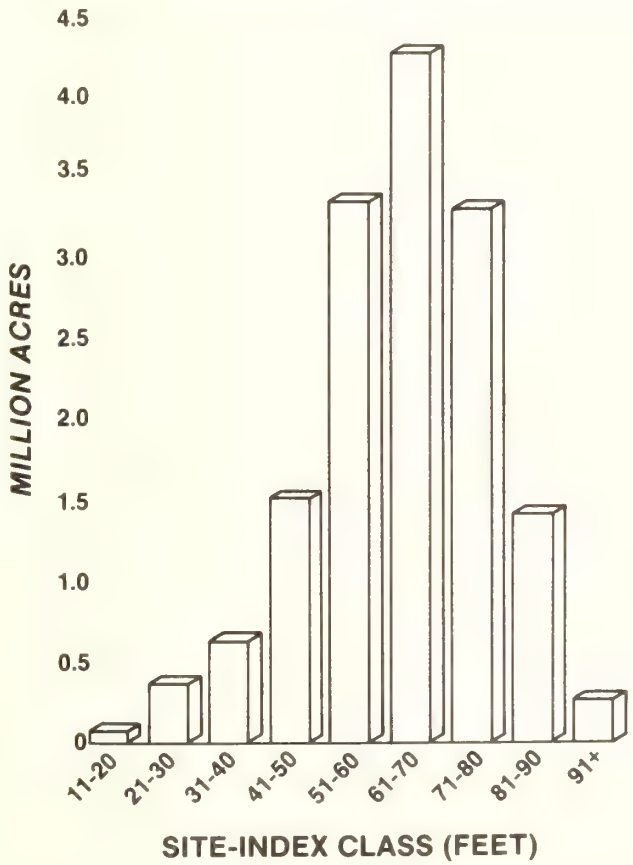

Figure 8.—*Area of commercial forest land by site-index class, Wisconsin, 1983.*

of describing forest land in terms of its inherent capacity to grow wood based on the culmination of mean annual increment[6] for fully stocked natural stands. Site class values are the cubic feet of growth per acre per year that might be expected if the above conditions are met.

The weighted average site class for Wisconsin is 67 cubic feet of growth per acre per year, compared to the Lake States average of 64. The highest average among types in the State is the 103 cubic feet per acre per year of the red pine type, followed by the balsam fir type (99 cubic feet), white pine (90 cubic feet), white spruce (80 cubic feet), and aspen (79 cubic feet). The most dominant forest type in terms of area, maple-birch, has an average productivity of 65 cubic feet per acre per year.

MOST PLANTATIONS LESS THAN 30 YEARS OLD

Forest plantations were classed into forest types according to intended dominant land use. Therefore,

[6]*Culmination of mean annual increment is the point at which a curve plotting current annual increment crosses a curve plotting mean annual increment.*

a field plot that fell in a red pine plantation beneath an overstory of species associated with the maple-birch type would be typed red pine if there was clear indication that the plantation was to be the dominant land use. The type assigned to a plantation always corresponds to the species planted.

Forest plantations totaled 622,000 acres in 1983. Fifty-eight percent of the plantations are under 30 years of age, having been planted from 1953 to 1982. This recent surge reflects the State's aggressive forest management policies and partially explains the increase in forest land since the last inventory. Some of the heaviest plantation activity occurred in the Central Unit where more than 65 percent of the plantations are less than 30 years old. Plantation establishment has sharply declined in the last 10 years, however; establishment rates are about half that of the previous two decades.

Plantations are more prominent in the northern units, but significant acres are found in the south:

Survey unit	Area of plantations (Thousand acres)	Percent of total
Northeast Unit	162.1	26
Northwest Unit	192.9	31
Central Unit	179.9	29
Southwest Unit	55.9	9
Southeast Unit	31.5	5
All Units	622.3	100

Plantations in the red pine type are the most extensive with 378,000 acres, 61 percent of the total plantation area. Jack pine is the second largest plantation type with 139,000 acres (22 percent of the total), followed by white pine with 55,000 acres (9 percent), white spruce with 40,000 acres (6 percent), and other species and nonstocked with 10,000 acres (2 percent).

STOCKING OF GROWING-STOCK TREES IS GOOD

Eighty-one percent of the commercial forest (12.0 million acres) is at least 61 percent stocked with growing-stock trees (medium stocking or better). Of this area, 1.0 million acres is overstocked with trees (134 percent stocked or more).

Although these figures indicate that the level of stocking of forests in the State is not a major problem, the seedling-sapling and sawtimber stands are stocked more sparsely than those in the poletimber stand-size class. More than one-fifth of seedling-sapling and sawtimber stands are poorly stocked (16.7 to 60.9 percent stocked), compared to 13 percent of poletimber stands. Many of the sawtimber stands are poorly stocked because of past grazing (fig. 9).

ONE-HALF OF FOREST WITHIN 1/4 MILE OF ROAD

The proximity of stands to maintained roads is an indicator of potential use by man—whether for timber harvesting, recreation, or other use. In Wisconsin, 50 percent of the commercial forest is within one-fourth mile of a maintained road (one graded at least once a year), and 97 percent of it is within 1 mile of a maintained road:

Distance to road	Area of commercial forest land	
(Miles)	(Thousand acres)	(Cumulative percent)
0 - 1/8	4,035.3	27
1/8 - 1/4	3,276.3	50
1/4 - 1	6,959.2	97
1 - 2 1/2	481.5	100
2 1/2 - 5	7.1	100
Total	14,759.4	

MOST OF FOREST WITHIN 1 MILE OF WATER

The nearness of a forest stand to a body of open water may have an impact on its recreational potential or its operability if a watershed is threatened. Fifty-six percent of the State's commercial forest is within one-fourth mile of water—a river, stream, lake, farm pond, swamp, or bog. Thirty-nine percent is within one-eighth of a mile of water:

Distance to water	Area of commercial forest land	
(Miles)	(Thousand acres)	(Cumulative percent)
0 - 1/8	5,738.6	39
1/8 - 1/4	2,594.9	56
1/4 - 1	5,209.7	92
1 - 2 1/2	1,011.5	99
2 1/2 - 5	195.4	100
5 - 10	9.3	100
Total	14,759.4	

Figure 9.—*Oak forest in southern Wisconsin where pasturing has eliminated most reproduction.*

NONFOREST LAND WITH TREES—AN ADDITIONAL RESOURCE

Besides commercial and noncommercial forest land, trees grow on some nonforest land too—many trees in some cases. To be classed as nonforest land with trees, an area must contain at least one tree per acre that is at least 5 inches in diameter at breast height (d.b.h.). Such areas amount to 1.2 million acres in Wisconsin.

Improved pasture constitutes the largest portion of this area with 322,300 acres, as shown in the following tabulation. In general, nonforest land with trees offers some opportunities for management and harvest, particularly for fuelwood. However, the small areas involved and the scattered frequency of the trees often impose economic constraints on the harvest of other timber products.

Land use	Area of nonforest land with trees (Thousand acres)
Improved pasture	322.3
Marsh	312.6
Urban and other	244.3
Wooded pasture	112.1
Idle farmland	110.5
Cropland	54.1
Wooded strips	45.0
Windbreaks	40.8
Total	1,241.7

FOREST-RELATED NONTIMBER RESOURCES[7]

Geology and Soils

The basic underlying geological material in Wisconsin is of precambrian origins. These ancient rocks appear at or near the surface in the northern one-third of the State and plunge to nearly 3,000 feet below the surface in the south. Much of the mineral wealth of the State is associated with these rocks. After their formation came layers of sedimentary rocks such as dolomite limestone, sandstone, and shale covering the southern two-thirds of the State.

The advancing and receding continental ice sheets or glaciers played the final role in developing most of the topography of current day Wisconsin. The grinding and scouring action of the ice leveled hills and filled valleys, leaving an unsorted mixture of boulders, gravel, sand, silt, and clay materials. As the ice receded, it left many water-formed deposits of outwash and ice-contact drift such as eskers and lacustrine sediments.

Glacial "drift" or "till" covers more than three-fourths of the State, ranging in depth from a few feet to several hundred feet. Only one portion of the State, the southwest corner, was not overcome by the ice sheets. This area is called the "Driftless Area" (lacking glacial drift) and is defined basically by those counties in the Southwest Survey Unit (fig. 4) south of Pepin County. Although the driftless area was not in direct contact with the ice sheet, it was invaded by outwash and covered with windblown loess after glacial activity in surrounding areas. The topography of this region has been completely shaped by the erosive forces of water. Thus the effect of water, either as liquid or solid, has been the dominant artisan in sculpting and defining the topography upon which the current flora and fauna of Wisconsin reside.

Minerals

Wisconsin has a variety of metallic and non-metallic mineral resources that play an important role in the State's economy. Some of the earliest settlements in Wisconsin centered around shallow lead and zinc deposits in the southwestern portion of the State. In fact, this area was the most important lead producing area in the nation from 1830 to 1871. Other metallic ores found in measurable quantities in the State include copper and iron. There is currently no metallic mining in progress in Wisconsin. The taconite mine in Jackson County and the zinc mine at Shullsburg have recently closed, and the copper-zinc mine in Forest County is only in the developmental stage. These various ore deposits are still substantial, however, and given the right economic circumstances they will again be mined.

Non-metallic mineral mining includes sand and gravel, crushed stone (dolomite, granite, taprock, sandstone, and quartzite), dimension or building stone (dolomite, granite, sandstone), clay, peat, and natural abrasives (silica sand). This type of mining is generally on the surface, occurs throughout the State, and is tied directly to the construction industry.

Extracting these resources can have serious consequences for the forest if not carefully planned and implemented. Proper land use management, esthetics and water quality are all valid areas of concern. These, along with many other considerations are the foundation of the complex regulations that have evolved to ensure that a conscious effort will be made to protect the environment to the greatest degree possible without putting the public at risk. No known threatened or endangered species have been adversely affected by mining or drilling operations in Wisconsin to date.

Wisconsin legislation requires close supervision by the DNR to ensure protection of the environment and requires environmental impact statements, reclamation plans, mining permits, and public hearings. State and local agencies, as well as private landowners and environmental interest groups, act as "watchdogs" on the entire mine development process. Mining on federal land where the federal government retains the mineral rights also needs federal permits and impact statements filed with the Department of Interior Bureau of Land Management. Chapters NR130, 131, and 132 of the Wisconsin Administrative Code can be referenced for procedures and standards relating to metallic mineral exploration, prospecting, and mining. Wisconsin currently has no comprehensive laws regarding the mining of non-metallic resources.

[7]*The text on nontimber and related resources is based on information from Wisconsin's Soil, Water, and Related Natural Resources: An Appraisal prepared by the Wisconsin State Board of Soil and Water Conservation Districts, February, 1980.*

Fish and Wildlife

Fishing is a popular pastime in Wisconsin as evidenced by the catch of nearly 116 million fish in 1977. Bass, perch, and panfish were the most abundant catch followed by trout, walleye, northern pike, salmon, and muskellunge. For many reasons, these fish may be thought of as a forest resource. The forest helps provide the high-quality silt-free water that is essential to basic fish habitat. By shading streambanks and lakeshores, the forest may help to maintain lower water temperatures that are essential to fish species such as trout. In 1977, more than 157 million fish were released in Wisconsin lakes, rivers, streams, and adjacent Great Lakes by the Wisconsin DNR. In additon to stocking, the State also provides assistance in fish management to landowners with programs such as the Trout Stream Habitat Management Program, funded by the sale of annual trout stamps.

Water pollution, including sedimentation, industrial wastes, non-point-source pollutants from agricultural land and roads, and possibly acid rain pose the greatest threats to fish habitat. To date there is little evidence that forest management practices are threatening water quality in the State.

Wildlife species are abundant in Wisconsin and can be generally divided into two broad groups—game and nongame species. Most attention is focused on game animals, but the nongame group is receiving increased consideration. In 1978, concern and awareness of nonconsumptive uses of wildlife prompted the Wisconsin Legislature to begin appropriating general revenues for endangered and nongame species.

Songbirds and raptors are perhaps the best known nongame animals because of their easy viewing during the day. Woodpeckers, warblers, wrens, herons, falcons, hawks, and eagles are a few of the hundreds of species enjoyed by birdwatchers throughout the State. Other nongame animals include shrews, moles, mice, rats, and other small nocturnal animals that are rarely seen.

Game animals are those harvested by hunting or trapping. Public involvement in providing quality hunting began in 1927 with acquisition of Horicon Marsh in Dodge County. Today nearly 700,000 acres of State purchased or leased land are available to the public for hunting and fishing. This land, managed by the Wisconsin DNR, consists of nearly 300 separate parcels in 69 counties throughout the State. Emphasis has been placed on acquiring areas in the southern portion of the State where public land is not as plentiful as in the northern counties.

The most widely hunted forest game animals are rabbit, squirrel, ruffed grouse, and whitetail deer. Because of hunting pressures, these species are often the focus of habitat management and research.

The structure and condition of the forest is usually a key ingredient in proper management of these species. The success of ruffed grouse, for example, is closely related to the condition of the aspen forests. To flourish, the grouse need three broad age classes of aspen. Broods of ruffed grouse do best in aspen stands less than 10 years old because the dense young trees provide protection from raptors, the primary predator of ruffed grouse. Stands of aspen between 10 and 30 years old are preferred cover for adult birds, and mature stands of aspen are the source of male aspen flowers, which are a primary food source for these game birds.

Whitetail deer are abundant in the forests of Wisconsin; although populations differ from area to area, the overall average for the State is roughly 65 deer per thousand acres of forest land. Much of the success of the deer population in Wisconsin can be attributed to logging pressure created by forest industry. The demand for industrial roundwood, particularly aspen, which is harvested by clearcutting, provides substantial areas of new growth for deer browse throughout the northern portion of the State. The extensive conifer forests of this region also provide excellent winter cover.

In the southern portion of the State, where mature oak forests generally provide little food and cover, intensive management techniques must be employed to preserve viable populations of animals. Much of this activity is focused on land purchased or leased by the State for wildlife purposes.

Other species closely linked with the forest are raccoon, mink, beaver, fox, and bear. Bears, once on their way to extinction in the State, are now plentiful enough to have a limited hunting season each year.

The key ingredients in the management of diverse wildlife habitats are protection and manipulation. Protection means setting aside and saving certain habitats that are unique, rare, or endangered, and blocks of forest that can be arranged for wildlife. Habitat manipulation is used to provide a variety of habitats within a forested area or between a forested and nonforested area. Consideration is given to the amount of interspersion and edge as well as the plant species composition, vertical structure, and the

size and type of openings. Important techniques in developing and maintaining of diversified habitats are harvesting timber to encourage young desirable vegetation or enhance vertical structure; planting more desirable tree, shrub, or herbaceous species for browse or cover; installing shallow impoundments to trap water; or conducting other operations that might alter patterns of diversity to meet specific habitat requirements. One simple, but often overlooked, management practice is the retention of snags when harvesting timber. These trees provide excellent nest and perch areas for birds as well as small mammals. Although most wildlife species respond favorably to the increased edge provided by traditional timber management activity, some species such as bear and wolf need larger areas of continuous forest and are thus area dependent or require a certain amount of old growth forest. For these species, traditional management practices may have to be modified to adequately address habitat needs.

Whether the use of wildlife is consumptive or not, the key to the enjoyment of this resource is accessability. Public land is easily accessible as a rule, as is industry land with some restrictions. Nonindustrial private owners, however, account for 62 percent of the commercial forest in the State and fully 84 percent of the forests in the southern part of the State. In collecting information on land access during the Wisconsin inventory, we found that access restrictions were greater (33 percent) in the more populated south than in the north (14 percent). The State has acknowledged this disparity and has concentrated its efforts to provide wildlife access in this part of the State to ensure opportunities to share and enjoy the State's wildlife heritage.

Survey unit	Total area of nonindustrial private commercial forest land	Area of nonindustrial private commercial forest land with restricted access	Percent with restricted access
	----- *(Thousand acres)* -----		
Northeast Unit	1,695.4	513.8	30
Northwest Unit	2,539.6	507.8	20
Central Unit	2,193.8	858.0	39
Southwest Unit	1,844.5	582.3	32
Southeast Unit	808.7	314.2	39
All units	9,082.0	2,776.1	31

Outdoor Recreation

Wisconsin's natural resources provide a wide range of quality recreational experiences. The State has 27,000 miles of rivers, 820 miles of shoreline on two Great Lakes, 14,927 inland lakes, 55 State Parks, 340 miles of State Park Trails, 3 State Recreation Areas, 9 State Forests, 28 County Forests, and hundreds of municipal parks and forests. Additionally, there are two national forests, a national lakeshore, and numerous miles of Wild and Scenic Riverway corridors.

The State Parks provide facilities for intensive recreation along with preservation of the natural resource (fig. 10). Recreation activities include cross-country skiing, skating, camping, swimming, and picnicking. Because of limited forest recreation access, the State forests in the southern part of Wisconsin are managed primarily for recreation. Privately managed recreation and resort areas also provide intensively managed recreation opportunities throughout the State. The public and private forests of the State that are classified as commercial forest land tend to be more involved in dispersed recreation activities such as hiking, primitive camping, cross-country skiing, and hunting. Intensive and dispersed recreation areas are often intermingled and offer the recreationist much diversity of recreational opportunities within a limited area.

Public and private recreation interests in the State are guided by a plan that is part of a continuing process to determine, promote, and implement a Statewide coordinated program that will provide high-quality recreation opportunities for residents and non-residents. The plan serves as a priority guide for acquiring, developing, and managing recreation areas and meets the requirements of eligibility for the federal Land and Water Conservation Fund Act of 1965. The official title of this periodically updated document is the State Comprehensive Outdoor Recreation Plan (SCORP).

Recreation opportunities often center on natural settings or lack of evidence of human alterations to the natural landscape. The fourth inventory of Wisconsin attempted to classify the State's commercial forest land along a gradient from primitive, where there is little evidence of human activity, to urban surroundings. Most of Wisconsin's forests were classified as a rural or roaded natural setting (83 percent) in which human modification of the landscape is obvious and the forest is generally within one-half mile of a maintained road. Nearly 17 percent of the State forests are classified as primitive or semi-primitive where evidence of buildings or other man-made structures are infrequent. Less than 1 percent of the State's commercial forest land is in an urban setting.

Figure 10.—*State and federal outdoor recreation opportunities in Wisconsin.*

Setting	Area of commercial forest land (Thousand acres)	Percent of Total
Primitive	16.3	0.1
Semi-primitive, motor	433.9	2.9
Semi-primitive, non-motor	2,032.8	13.8
Roaded natural	7,849.0	53.2
Rural	4,362.3	29.6
Urban	65.1	0.4
All settings	14,759.4	100.0

APPENDIX

ACCURACY OF SURVEY

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit level. Consequently, the reported figures are estimates only. A measure of reliability of these figures is given by sampling errors. These sampling errors mean the chances are two out of three that the true inventory value is within the limits indicated.

For example, the estimated commercial forest area in Wisconsin in 1983, 14,759.4 thousand acres, has a sampling error of ±0.22 percent (±32.5 thousand acres). Therefore, the commercial forest area from a 100-percent inventory, would have a two in three chance of falling between 14,726.9 and 14,791.9 thousand acres.

As survey data are broken down into sections smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for commercial forest area in a particular unit or county is higher than that for total commercial forest area in the State (table 30 shows the sampling errors for estimates smaller than State totals).

SURVEY PROCEDURES

The 1983 Wisconsin survey used a two-phase sampling design. This sampling scheme and associated estimators are similar to sampling with partial replacement (SPR) in that a set of randomly located plots is available for remeasurement and a random set of new plots are established and measured. Major enhancements in the new Wisconsin design are stratification for disturbance on the old sample and use of a growth model to improve regression estimates made on the old undisturbed forest plots. The growth model used in the Wisconsin survey design was the Stand and Tree Evaluation and Modeling System (STEMS).[8]

The major steps in the new survey design were as follows:

1. The first phase of the design is aerial photo interpretation. In this phase, two sets of random points were located on current aerial photography. The first is a set of new photo points and the second is a set of relocated old photo points (ground plot locations from the previous inventory).

A total of 195,220 1-acre points, including old ground sample locations, was systematically distributed across aerial photos of the entire State, except the Chequamegon and Nicolet National Forests (table 4). These points were classified into land classes as shown below to make a preliminary estimate of forest area. Next, a total of 89,420 of these points was stereoclassified as to stand-size class and density. Finally, 15,535 points were examined to correct the preliminary area estimate for errors in photo classification and for actual changes in land use since the photos were taken.

2. The second phase of the design was a ground sample. The plot selection and measurement procedures of phase two of the new Wisconsin survey design are outlined in figure 11.

From the new photo points, a random sample of ground plots was established and measures of land use, volume, mortality, and cutting were recorded.

[8]*For more information on STEMS, see: Belcher, D. L.; Holdaway, M. R.; Brand, G. J. STEMS: The stand and tree evaluation and modeling system. Gen. Tech. Rep. NC-79. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1981. 18 p.*

Table 4.--Number of photo points observed and ground plots visited by land use class, Wisconsin, 1983

Land class	Photo points classified	Photo points stereoclassified	Inventory plots checked
Forest land	85,183	85,183	6,999
Unproductive/reserved forest land	1,321	1,321	156
Nonforest land	102,312	2,916	7,914
Water	6,404	0	466
Total	195,220	89,420	15,535

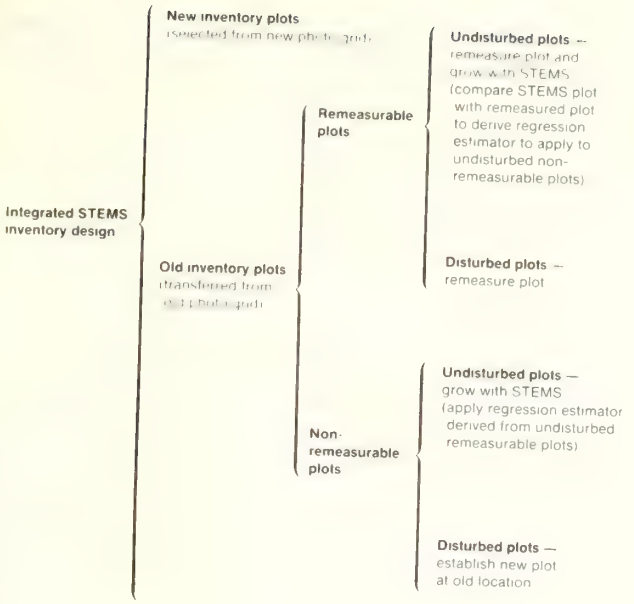
Integrated STEMS inventory design
New inventory plots
Undisturbed plots – remeasure plot and grow with STEMS (compare STEMS plot with remeasured plot to derive regression estimator to apply to undisturbed non-remeasurable plots)
Remeasurable plots
Old inventory plots
Disturbed plots – remeasure plot
Undisturbed plots – grow with STEMS (apply regression estimator derived from undisturbed remeasurable plots)
Non-remeasurable plots
Disturbed plots – establish new plot at old location

Figure 11.—*Logic structure for the 1983 Wisconsin sampling design.*

At each forest ground plot location, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. These locations were monumented for future remeasurement.

The procedure for the old inventory photo points (old plot locations) was somewhat different. Old plots were classed as remeasurable (monumented) or nonremeasurable (not monumented and thus difficult to relocate in the field). Within both of these groups, old plots can additionally be identified as undisturbed or disturbed. The remeasurable old inventory photo points that were classified as forest undisturbed were remeasured on the ground to obtain measurements of current land use, volume, growth, and removals. Additionally, all forest undisturbed remeasurable plots were projected to the current time using STEMS, which yields projected estimates of current volume and growth. Comparing the projected and observed values for these plots provided regression estimators to adjust the projected values of the undisturbed nonremeasurable plots. All disturbed remeasurable plots were remeasured on the ground to assess changes since the last inventory. Disturbance as used here refers to any change that can be detected on aerial photos and that the STEMS growth processor cannot predict, such as catastrophic mortality, cutting, seedling stands, and land use change.

The nonremeasurable forest points are those that were not monumented during the 1968 inventory but play a crucial role in the new survey design. These points were carefully examined, comparing past and current aerial photography to determine which plots were undisturbed and had conditions that could be simulated by STEMS. For those plots that could be updated, past and current photography was examined to determine that only normal growth had occurred. STEMS was then used to "grow" the old plot and tree data to produce an estimate of current data. Thus these points became ground plots even though the information was obtained without actually visiting the plot. The plot record for each updated plot was sent to the field for verification of current ownership information. For points classified as disturbed, a new ground plot was established as close to the old location as possible. In this way, information about land use trend can be recorded even though the old plot cannot be exactly located for remeasurement.

The estimation procedure for computing statistics from this sampling design was more complicated than the simple two-phase estimation procedure used in the past. In fact, this procedure yielded two independent samples, one coming from the new photo points and the other coming from the old photo points that are remeasured or updated. A more detailed description of the sampling design is available in a separate publication.

3. Under an agreement with the Forest Service Region 9, North Central crews established 10-point variable radius plots on the Chequamegon and Nicolet National Forests when they established other plots in the Northwest and Northeast Survey Units. Each national forest provided the Station with data on the area of commercial forest land by forest type, stand-size class, and density for the Forest. The Station then computed volume, growth, and mortality statistics. Area and volume tables for the forests were approved by each national forest and Regional Office staff before publication.

4. Statistics on timber utilization during 1981 were obtained from mill surveys. The Wisconsin Department of Natural Resources canvassed resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-State sawmills, pulpmills, and veneer mills to determine their use of Wisconsin timber. Fuelwood and fencepost output was based on a sample of public and private land owners to determine their production of fuelwood and fenceposts, and on a canvass of industrial and public timber owners. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Wiscon-

sin primary wood-using plants. Timber cut for products by ownership class was determined by a canvass of public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

5. A total of 2,568 felled trees on 133 active logging operations was measured throughout the State during 1981-1982 to develop wood utilization factors for converting timber products output to timber removals for saw logs and pulpwood. Factors for all other products were obtained during the 1966-1967 Wisconsin utilization study.

6. Field data were sent to St. Paul, Minnesota, for processing and analysis.

COMPARING WISCONSIN'S FOURTH INVENTORY WITH THE THIRD INVENTORY

Data from new forest inventories are often compared with data from earlier inventories to determine trends in forest resources. Changes in procedures and definitions between surveys often make it necessary to adjust earlier survey data so that they are comparable to data from the new survey. A consistency check was made for each Forest Survey Unit in Wisconsin to ensure that the changes observed between inventories reflect actual changes in the resource and not changes in definitions or procedures.

IDENTIFYING AND CORRECTING DEFINITIONAL OR PROCEDURAL CHANGES

Some procedural changes were made between the 1968 and 1983 inventories of Wisconsin. The major change affecting area estimates was the separation of the old spruce-fir forest type into two distinct new types—white spruce and balsam fir. Comparisons with old data may be made by adding the two new types together. Changes in ownership class definitions between the two surveys also affect area comparisons. A new definition of Indian ownership shifted a large area of commercial forest land, 213,100 acres, out of industry ownership and into Indian ownership in the Northeast Unit. Industry numbers are comparable if this area is subtracted from the 1968 report. Other definitional changes for farmer ownership have caused some land previously classed as farmer owned to be currently classed as miscellaneous private ownership. With these exceptions the area figures presented in the two inventories may be compared directly.

Other reports will describe changes in definitions and procedures that may affect comparisons of volume, growth, and mortality.

FOREST MANAGEMENT ASSISTANCE

Wisconsin's Forest Crop Law (FCL) was enacted in 1927 to encourage land owners to grow timber as a continuous crop. The regular taxation system, which taxed land and timber annually, encouraged premature cutting and discouraged long-term forestry investments. The FCL places an annual per acre tax on the land, but the value of the timber is taxed only at time of harvest. The value of this tax is adjusted by statutory formula every 10 years. This defers taxes on the timber crop until there is income to the owner. Currently more than 1.4 million acres in 69 counties are enrolled in the program. The Woodland Tax Law (WTL) was enacted in 1954 for owners of small tracts of forest land (less than full 40-acre descriptions). The WTL is similar in function to the FCL, but does not require a tax at the time of harvest. Approximately 0.5 million acres are enrolled under the WTL.

Professional foresters, technicians, associations, tax guides, lending agencies, and industrial experts are available to help the private owner of forest land. A partial list of assistance organizations follows:

Wisconsin Woodland Owners Association
Box 188, Madison, Wisconsin 53701

An organization of small woodland owners that seeks to improve conditions related to managing, harvesting, and marketing on private woodlands. The association has informal meetings and a quarterly newsletter.

Wisconsin Tree Farm Committee
Box 250, Madison, Wisconsin 53701

Advice and assistance from industry foresters to private forest owners wanting to protect and manage their forest resources.

Private Forestry Consultants
Various Locations

More than 30 professional forestry firms offer forestry services on a fee basis, including surveying, appraisal, timber sale administration, general management planning, litigation, expert testimony, and

Christmas tree management. The scope of their services is much broader than those provided by DNR foresters.

North Central Forest Experiment Station
1992 Folwell Ave., St. Paul, Minnesota 55108

This USDA Forest Service research station is responsible for forestry research and inventory in seven states—Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, and Wisconsin—and also has inventory responsibilities in Kansas, Nebraska, North Dakota, and South Dakota. Research information is available on timber management, Christmas tree pest management, logging technology, forest genetics, forest inventory techniques, and other fields. Individual consulting is limited and fees are sometimes charged for special request information. The Forest Service Northeastern Area State and Private Forestry also has offices at the North Central Station. State and Private Forestry works through and with various State, private, and federal organizations to relieve the pressure on public land through increased management and utilization of private forest land.

Soil Conservation Service
County SCS Office (generally in courthouse)

County conservationists provide technical assistance to forest land owners primarily for soil conservation and watershed protection. Some cost-sharing is available forforest improvement.

Wisconsin Department of Natural Resources
(sub-area office addresses listed below)

DNR foresters provide on-the-ground technical services for landowners interested in establishing new forests or improving existing ones. The DNR is the first contact for most public financial assistance programs for forest land improvement and for entries under the forest tax laws. Programs other than the forest tax laws include the Forestry Incentives Program (FIP) and the Agricultural Conservation Program (ACP), which are funded by the USDA Forest Service, and the Agricultural Stabilization and Conservation Service, respectively. They provide payments that cover a portion of the costs for timber improvement and tree planting.

The Rural Forestry Assistance program (RFA) is co-funded by the DNR and the Forest Service to provide technical assistance to private forest landowners. Nearly every county in Wisconsin has a DNR RFA forester. In addition to administering financial assistance, the RFA forester also assists with timber sales, insect and disease control and education programs.

Wisconsin DNR District Offices

SOUTHERN DISTRICT

Dodgeville Area (Richland, Sauk, Iowa, Grant, and Lafayette Counties)

DNR Area Supervisor
Hwy 23, Route 1, Box 10
Dodgeville, WI 53533

Madison Area (Dane, Jefferson, Green, and Rock Counties)

DNR Area Supervisor
3911 Fish Hatchery Road
Madison, WI 53711

Horicon Area (Columbia, Dodge, Fond du Lac, Green Lake, and Marquette Counties)

DNR Area Supervisor
Box D
Horicon, WI 53032

WEST CENTRAL DISTRICT

Eau Claire Area (Eau Claire, Chippewa, Pepin, Dunn, Pierce, and St. Croix Counties)

DNR Area Supervisor
1621 Westgate Road
Eau Claire, WI 54701

Black River Falls Area (Buffalo, Trempealeau, Clark, and Jackson Counties)

DNR Area Supervisor
Route 4, Box 5
Black River Falls, WI 54615

La Crosse Area (La Crosse, Vernon, Crawford, and Monroe Counties)

DNR Area Supervisor
3550 Mormon Coulee Road
Room 108, SOB
La Crosse, WI 54601

NORTH CENTRAL DISTRICT

Antigo Area (Landglade, Lincoln, and Marathon Counties)

DNR Area Supervisor
1635 Neva Road
Box 310
Antigo, WI 54409

Woodruff Area (Vilas, Oneida, and Forest Counties)

DNR Area Director
Box 440
Woodruff, WI 54568

Wisconsin Rapids Area (Wood, Portage, Adams, and Juneau Counties)

DNR Area Director
1681 2nd Avenue South
Room 118
Wisconsin Rapids, WI 54494

NORTHWEST DISTRICT

Brule Area (Douglas, Bayfield, Ashland, and Iron Counties)

DNR Area Director
Box 125
Brule, WI 54820

Cumberland Area (Burnett, Washburn, Barron, and Polk Counties)

DNR Area Director
1341 2nd Avenue
Box 397
Cumberland, WI 54829

Park Falls Area (Price, Taylor, Rusk, and Sawyer Counties)

DNR Area Director
Box 220
Park Falls, WI 54552

LAKE MICHIGAN DISTRICT

Green Bay Area (Brown, Kewaunee, Manitowoc, and Door Counties)

DNR Area Director
200 North Jefferson
Suite 511
Green Bay, WI 54301

Marinette Area (Florence, Marinette, Oconto, Menominee, and Shawano Counties)

DNR Area Director
Industrial Parkway
Box 16
Marinette, WI 54143

Oshkosh Area (Waupaca, Outagamie, Waushara, Winnebago, and Calumet Counties)

DNR Area Director
Box 2565
Oshkosh, WI 54903

SOUTHEAST DISTRICT

(Sheboygan, Washington, Ozaukee, Waukesha, Racine, Milwaukee, Walworth, and Kenosha Counties)

DNR Area Supervisor
Box 12436
Milwaukee, WI 53212

TREE SPECIES GROUPS IN WISCONSIN[9]

SOFTWOODS
- Jack pine ..... *Pinus banksiana*
- Red pine ..... *Pinus resinosa*
- Eastern white pine ..... *Pinus strobus*
- White spruce ..... *Picea glauca*
- Black spruce ..... *Picea mariana*
- Balsam fir ..... *Abies balsamea*
- Eastern hemlock ..... *Tsuga canadensis*
- Tamarack ..... *Larix laricina*
- Eastern redcedar ..... *Juniperus virginiana*
- Northern white-cedar ..... *Thuja occidentalis*
- Other softwoods
  - Norway spruce ..... *Picea abies*
  - Scotch pine ..... *Pinus sylvestris*

HARDWOODS
- White oak
  - White oak ..... *Quercus alba*
  - Swamp white oak ..... *Quercus bicolor*
  - Bur oak ..... *Quercus macrocarpa*
- Select red oak
  - Northern red oak ..... *Quercus rubra*
- Other red oak
  - Northern pin oak ..... *Quercus ellipsoidalis*
  - Black oak ..... *Quercus velutina*
- Select hickory
  - Shagbark hickory ..... *Carya ovata*
- Other hickory
  - Pignut hickory ..... *Carya glabra*
  - Bitternut hickory ..... *Carya cordiformis*
- American basswood ..... *Tilia americana*
- Beech ..... *Fagus grandifolia*
- Yellow birch ..... *Betula alleghaniensis*
- Hard maple
  - Sugar maple ..... *Acer saccharum*
  - Black maple ..... *Acer nigrum*
- Soft maple
  - Red maple ..... *Acer rubrum*
  - Silver maple ..... *Acer saccharinum*
- Elm
  - American elm ..... *Ulmus americana*
  - Slippery elm ..... *Ulmus rubra*

[9]*The common and scientific names are based on: Little, Elbert L. Check list of native and naturalized trees of the United States. Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture, Forest Service; 1979. 375 p.*

Rock elm ..... *Ulmus thomasii*
Black ash ..... *Fraxinus nigra*
White and green ash
White ash ..... *Fraxinus americana*
Green ash ..... *Fraxinus pennsylvanica*
Eastern cottonwood ..... *Populus deltoides*
Black willow ..... *Salix nigra*
Hackberry ..... *Celtis occidentalis*
Balsam poplar ..... *Populus balsamifera*
Bigtooth aspen ..... *Populus grandidentata*
Quaking aspen ..... *Populus tremuloides*
Paper birch ..... *Betula papyrifera*
River birch ..... *Betula nigra*
Black cherry ..... *Prunus serotina*
Black walnut ..... *Juglans nigra*
Butternut ..... *Juglans cinerea*
Other hardwoods
Boxelder ..... *Acer negundo*
Black locust ..... *Robinia pseudoacacia*
Honeylocust ..... *Gleditsia triacanthos*
Red mulberry ..... *Morus rubra*
Northern catalpa ..... *Catalpa speciosa*
Noncommercial species
Mountain maple ..... *Acer spicatum*
Eastern hophornbeam ..... *Ostrya virginiana*
Peachleaf willow ..... *Salix amygdaloides*
American hornbeam .... *Carpinus caroliniana*
Hawthorn ..... *Crataegus* spp.
Striped maple ..... *Acer pensylvanicum*
Mountain-ash ..... *Sorbus* spp.
Pin cherry ..... *Prunus pensylvanica*
Chokecherry ..... *Prunus virginiana*

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.
1 pound = 0.454 kilograms.
1 ton = 0.907 metric tons.

DEFINITION OF TERMS

Basal area.—The area in square feet of the cross section at breast height of a single tree. When the basal area of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial forest land are capable of producing more than 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for producing industrial wood in the foreseeable future.)

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.—Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Cropland.—Land under cultivation within the past 24 months; including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, and land in soil improvement crops, but excluding land cultivated in developing improved pasture.

Farm.—Any place from which $1,000 or more of Agricultural products were produced and sold during the year.

Farmer-owned land.—Land owned by farm operators. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide. Also see definitions for land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, and water.

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants. Excludes land owned by small sawmill

firms sawing less than 100,000 board feet annually.

Forest trees.—Woody plants having a well-developed stem and usually more than 12 feet tall at maturity.

Forest type.—A classification of forest land based on the species forming a plurality of live tree stocking. Major forest types in Wisconsin are:

Jack pine.—Forests in which jack pine comprises a plurality of the stocking. (Common associates include eastern white pine, red pine, aspen, birch, and oak.)

Red pine.—Forests in which red pine comprises a plurality of the stocking. (Common associates include eastern white pine, jack pine, aspen, birch, and oak.)

White pine.—Forests in which eastern white pine comprises a plurality of the stocking. (Common associates include red pine, jack pine, aspen, birch, and maple.)

Balsam fir.—Forests in which balsam fir and white spruce comprise a plurality of stocking with balsam fir the most common. (Common associates include aspen, maple, birch, northern white-cedar, and tamarack.)

White spruce.—Forests in which white spruce and balsam fir comprise a plurality of the stocking with white spruce the most common. (Common associates include aspen, maple, birch, northern white-cedar, and tamarack.)

Black spruce.—Forests in which swamp conifers comprise a plurality of the stocking with black spruce the most common. (Common associates include balsam fir, tamarack, and northern white-cedar.)

Northern white-cedar.—Forests in which swamp conifers comprise a plurality of the stocking with northern white-cedar the most common. (Common associates include balsam fir, tamarack, and black spruce.)

Tamarack.—Forests in which swamp conifers comprise a plurality of the stocking with tamarack the most common. (Common associates include black spruce, balsam fir, and northern white-cedar.)

Oak-hickory.—Forests in which northern red oak, white oak, bur oak, or hickories, singly or in combination, comprise a plurality of the stocking. (Common associates include jack pine, elm, and maple.)

Elm-ash-soft maple.—Forests in which lowland elm, ash, cottonwood, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include birch, aspen, and balsam fir.)

Maple-birch.—Forests in which sugar maple, basswood, yellow birch, upland American elm, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include white pine, elm, hemlock, and basswood.)

Aspen.—Forests in which quaking aspen or bigtooth aspen, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, pines, balsam fir, and paper birch.)

Paper birch.—Forests in which paper birch comprises a plurality of the stocking. (Common associates include maple, aspen, and balsam fir.)

Exotic.—Forests in which species not native to Wisconsin comprise a plurality of the stocking. (Mostly Scotch pine plantations.)

Gross area.—The entire area of land and water as determined by the Bureau of the Census.

Growing-stock trees.—Live trees of commercial species qualifying as acceptable trees. (Note: Excludes rough, rotten, and dead trees.)

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.—Includes former cropland, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.—Land currently improved for grazing by cultivating, seeding, irrigating, or clearing of trees or brush and less than 16.7 percent stocked with live trees.

Indian land.—All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Land area.—*Bureau of the Census*.—The area of dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

Forest Inventory and Analysis.—The same as the Bureau of the Census, except minimum width of streams, etc., is 120 feet and minimum size of lakes, etc., is 1 acre.

Maintained road.—Any road, hard-topped or other surfaces, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.—Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Miscellaneous federal land.—Federal land other than National Forest.

Miscellaneous private land.—Privately owned land other than forest-industry and farmer-owned land.

National Forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land administered by the USDA Forest Service.

Noncommercial forest land.—(a) Unproductive forest land and (b) productive-reserved forest land.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in area to qualify as nonforest land.)

Nonforest land without trees.—Nonforest land with no live trees at least 5 inches d.b.h. present.

Nonforest land with trees.—Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.—Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Ownership.—Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.—The amount of commercial forest land owned by one owner, regardless of the number of parcels.

Owner tenure.—The length of time a property has been held by the owner.

Pasture and range.—Land which is currently improved for grazing by cultivation seeding or irrigation plus land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Physiographic class.—A measure of soil and water conditions that affect tree growth on a site.

The physiographic classes are:

Xeric sites.—Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Xeromesic sites.—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. Example: dry oak ridge.

Mesic sites.—Deep, well-drained soils. Growth and species occurrence are limited only by climate.

Hydromesic sites.—Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent. Example: better drained bottomland hardwood sites.

Hydric sites.—Very wet sites where excess water seriously limits both growth and species occurrence. Example: frequently flooded river bottoms and spruce bogs.

Poletimber stands.—(See stand-size class.)

Poletimber trees.—Growing-stock trees of commercial species at least 5 inches d.b.h. but smaller than sawtimber size.

Productive-deferred forest land.—Forest land sufficiently productive to qualify as commercial forest land but presently withdrawn from timber utilization because it is being considered for possible inclusion into the Wilderness system.

Productive-reserved forest land.—Forest land sufficiently productive to qualify as commercial forest land but withdrawn from timber utilization through statute, administration regulation, designation, or exclusive use for Christmas tree production, as indicated by annual shearing.

Rotten trees.—Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of extra cull volume in a tree is rotten.

Rough trees.—(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Salvable dead trees.—Standing or down dead trees that are considered merchantable by regional standards.

Saplings.—Live trees 1 to 5 inches d.b.h.

Sapling-seedling stands.—(See stand-size class.)

Sawtimber stands.—(See stand-size class.)

Sawtimber trees.—Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9 inches d.b.h. Hardwoods must be at least 11 inches d.b.h.

Seedlings.—Live trees less than 1 inch d.b.h. that are expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Setting class.—A classification of the physical aspects of the forest stand in relation to the surrounding natural environment. The setting classes are:

Primitive.—An area 3 or more miles from *all* maintained roads or railroads and which has an unmodified natural environment. There can be evidence of foot trails or recreational use. Structures in use are rare. Contact with humans is rare and chances of seeing wildlife are good. Example: Boundary Waters Canoe Area, Minnesota.

Semi-primitive nonmotorized.—An area 1/2 to 3 miles from *all* maintained roads or railroads, but which can be close to primitive roads or trails occasionally used. Modifications to the environment are evident, such as old stumps from logging, but are not apparent to the casual observer. Structures in use are rare. Human contact is low and chances of seeing wildlife are good. Example: Recently undisturbed State lands.

Semi-primitive motorized.—An area 1/2 to 3 miles from *all* maintained roads or railroads, but 1/2 mile or less from primitive roads or trails used by motorized vehicles. Modifications to the environment, human contact and chances of seeing wildlife are the same as code 2. Example: State lands with snowmobile trails.

Roaded natural.—An area less than 1/2 mile from maintained roads or railroads. Modifications to the environment may be obvious, and buildings are occasionally seen. Chances of seeing wildlife are diminished by evidence of increased human contact. Example: Private hunting lands.

Rural.—An area close to maintained roads, but not limited by distance, and in a setting which has been substantially altered by man. Structures and houses are obvious and/or visible, and human contact is frequent. Wildlife can be present, but sightings are rare. Example: Farm woodlot.

Urban.—An area close to maintained roads, but not limited by distance and surrounded by an urban-suburban setting. Substantial modifications to the environment may be apparent and buildings or structures can usually be seen. Human contact is quite frequent and wildlife sightings are rare. Example: Home development areas.

Shrub.—A woody, perennial plant differing from a perennial herb in its persistent and woody stem(s), and less definitely from a tree in its lower stature and/or the general absence of a well-defined main stem. For this report shrubs were separated somewhat arbitrarily into tall and low shrubs as follows:

Tall shrubs.—Shrubs normally taller than 1.6 to 3.2 feet (0.5 to 1.0 meter).

Low shrubs.—Shrubs normally shorter than 1.6 to 3.2 feet (0.5 to 1.0 meter). (Woody perennial vines, such as grape, were included with low shrubs.)

Site class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.—An expression of forest site quality based on the total height of free-growing dominant or codominant trees of a representative species in the forest type at age 50.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.—A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class.—Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.—The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.—A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber, or seedlings and saplings.

Sawtimber stands.—Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.—Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and/or seedlings.

Nonstocked areas.—Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.—Land owned by States, or land leased to these governmental units for 50 years or more.

Stocking.—The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard. A stocking

percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h. Stands are grouped into the following stocking classes:

Overstocked stands.—Stands in which stocking of trees is 134.0 percent or more.

Fully stocked stands.—Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium stocked stands.—Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly stocked stands.—Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.—Commercial forest land on which stocking of trees is less than 16.7 percent.

Tree size class.—A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land.—Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural condidtions because of adverse site conditions. (Note: Adverse conditions include shallow soils, dry climate, poor drainage, high elevation, steepness, and rockiness.)

Urban and other areas.—Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards; cemeteries; roads; railroads; airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified class.

Water.—*Bureau of the Census*.—Permanent inland water surfaces, such as lakes, reservoirs, and ponds having 40 acres or more of area; streams, sloughs, estuaries, and canals one-eighth of a statute mile or more in width.

Noncensus.—Permanent inland water surfaces, such as lakes, reservoirs, and ponds having 1-39.9 acres of area; streams, sloughs, estuaries, and canals 120 feet to one-eighth of a statute mile in width.

Windbreak.—A group of trees less than 120 feet wide used for the protection of soil, cropfields, and buildings in use.

Wooded pasture.—Improved pasture with more than 16.7 percent stocking in live trees but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing.

Wooded strip.—An acre or more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide.

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Table 5.--Area of land by land class, Wisconsin, 1968 and 1983

(In thousand acres)

Land class	1968	1983
Forest land		
Commercial forest land		
Jack pine	727.6	546.5
Red pine	310.2	478.2
White pine	177.6	225.6
Balsam fir	552.8	419.4
White spruce	75.2	61.4
Black spruce	235.9	273.0
Northern white-cedar	302.4	370.7
Tamarack	222.2	222.7
Oak-hickory	2,664.9	2,858.7
Elm-ash-soft maple	1,157.6	1,240.6
Maple-birch	3,521.6	3,996.9
Aspen	3,664.6	3,261.5
Paper birch	554.4	641.6
Exotic	--	2.2
Nonstocked	369.8	160.4
Subtotal	14,536.8	14,759.4
Noncommercial forest land		
Unproductive	374.4	331.0
Productive-reserved	34.2	260.9
Subtotal	408.6	591.9
Total	14,945.4	15,351.3
Nonforest land		
Cropland	12,043.3	12,712.4
Pasture and range	1,845.1	2,128.7
Other	6,024.7	4,640.4
Total	19,913.1	19,481.5
Total land	34,858.5	34,832.8
Water (Bureau of the Census)	1,080.1[1/]	1,115.6[2/]
Total land and water	35,938.6[1/]	35,948.4[2/]

[1/] U.S. Department of Commerce, Bureau of Census, 1960.
[2/] U.S. Department of Commerce, Bureau of Census, 1980.

Table 6.--Area of land by land use class and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Land use class	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Forest land						
Commercial forest	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2
Unproductive forest	331.0	140.8	165.8	21.5	--	2.9
Productive reserved	260.9	52.0	114.6	30.1	38.8	25.4
Total	15,351.3	4,021.3	5,431.2	3,002.5	1,958.8	937.5
Nonforest land						
Nonforest with trees						
Cropland with trees	54.1	3.9	12.6	9.9	7.4	20.3
Improved pasture with trees	322.3	34.7	60.1	99.4	115.9	12.2
Wooded strips	45.0	5.8	8.1	20.9	10.2	--
Idle farmland with trees	110.5	21.5	16.0	60.5	12.5	--
Marsh with trees	312.6	40.1	90.6	149.4	12.7	19.8
Urban and other with trees	244.3	56.4	56.9	69.1	8.7	53.2
Windbreaks	40.8	5.0	10.6	2.6	12.2	10.4
Wooded pasture	112.1	--	30.3	32.0	47.4	2.4
Subtotal	1,241.7	167.4	285.2	443.8	227.0	118.3
Nonforest without trees						
Cropland without trees	12,658.3	744.7	1,259.7	2,431.1	2,895.2	5,327.6
Improved pasture without trees	1,694.3	174.6	255.0	407.3	549.2	308.2
Idle farm without trees	195.2	55.8	14.6	60.3	20.5	44.0
Marsh without trees	1,206.0	215.2	374.2	259.6	55.1	301.9
Other farm-farmstead	364.2	36.4	23.2	88.8	66.0	149.8
Urban and other	2,028.7	244.9	269.2	449.4	372.1	693.1
Noncensus water	93.1	39.9	13.1	27.4	6.6	6.1
Subtotal	18,239.8	1,511.5	2,209.0	3,723.9	3,964.7	6,830.7
Total	19,481.5	1,678.9	2,494.2	4,167.7	4,191.7	6,949.0
Total land	34,832.8	5,700.2	7,925.4	7,170.2	6,150.5	7,886.5
Water (Bureau of the Census)[1/]	1,115.6	262.8	290.3	114.6	136.6	311.3
Total land and water[1/]	35,948.4	5,963.0	8,215.7	7,284.8	6,287.1	8,197.8

Table 7.--Area of commercial forest land by ownership class and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Ownership class	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
National Forest	1,242.3	548.8	693.5	--	--	--
Miscellaneous federal	176.2	3.9	7.3	130.6	29.8	4.6
State	569.4	193.7	176.8	96.6	34.8	67.5
County and municipal	2,179.8	646.9	1,109.8	399.3	10.9	12.9
Indian	353.7	254.5	94.6	4.6	--	--
Forest industry	1,156.0	485.3	529.2	126.0	--	15.5
Farmer	3,513.7	381.6	450.2	996.7	1,255.9	429.3
Misc. private-corp.	665.9	163.1	224.0	129.5	92.8	56.5
Misc. private-indiv.	4,902.4	1,150.7	1,865.4	1,067.6	495.8	322.9
All owners	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2

Table 8.--Area of land and forest land by county, Wisconsin, 1983

County	All land[1]	Forest land[2]			Commercial forest as a percent of land area	All forest as a percent of land area	Sampling error for commercial forest land (percent)
		All forest	Noncommercial[3]	Commercial[4]			
NORTHEAST UNIT							
Florence	310.8	254.2	10.2	244.0	79	82	1.74
Forest	647.1	543.9	51.2	492.7	76	84	1.22
Langlade	559.0	391.7	17.2	374.5	67	70	1.40
Lincoln	567.1	411.2	17.4	393.8	69	73	1.37
Menominee	229.7	213.1	--	213.1	93	93	1.86
Marinette	893.1	661.0	21.3	639.7	72	74	1.07
Oconto	641.4	357.4	10.3	347.1	54	56	1.46
Oneida	723.2	531.1	34.0	497.1	69	73	1.22
Shawano	574.0	259.2	4.0	255.2	45	45	1.70
Vilas	554.8	398.5	27.2	371.3	67	72	1.41
All counties	5,700.2	4,021.3	192.8	3,828.5	67	71	0.44
NORTHWEST UNIT							
Ashland	670.9	569.1	65.3	503.8	75	85	1.16
Barron	553.4	165.7	7.0	158.7	29	30	2.07
Bayfield	935.8	780.1	39.6	740.5	79	83	0.96
Burnett	523.3	335.9	18.8	317.1	61	64	1.46
Douglas	835.5	640.3	12.4	627.9	75	77	1.04
Iron	481.0	400.I	22.2	377.9	79	83	1.34
Polk	588.4	230.0	9.2	220.8	38	39	1.75
Price	803.8	598.4	47.6	550.8	69	74	1.11
Rusk	584.4	373.2	10.1	363.1	62	64	1.37
Sawyer	803.3	638.9	31.2	607.7	76	80	1.06
Taylor	624.2	368.0	13.6	354.4	57	59	1.38
Washburn	521.4	331.5	3.4	328.1	63	64	1.44
All counties	7,925.4	5,431.2	280.4	5,150.8	65	69	0.36
CENTRAL UNIT							
Adams	414.7	236.7	2.4	234.3	57	57	1.24
Chippewa	650.9	232.4	6.7	225.7	35	36	1.26
Clark	779.6	316.1	--	316.1	41	41	1.07
Eau Claire	408.3	156.3	1.8	154.5	38	38	1.53
Jackson	638.6	378.9	7.5	371.4	58	59	0.98
Juneau	495.5	256.0	3.9	252.1	51	52	1.19
Marathon	997.9	365.4	6.9	358.5	36	37	1.00
Marquette	290.9	94.3	--	94.3	32	32	1.95
Monroe	578.3	247.3	2.3	245.0	42	43	1.21
Portage	518.5	174.3	--	174.3	34	34	1.44
Waupaca	482.8	181.1	8.5	172.6	36	38	1.44
Waushara	401.7	157.2	11.6	145.6	36	39	1.57
Wood	512.5	206.5	--	206.5	40	40	1.32
All counties	7,170.2	3,002.5	51.6	2,950.9	41	42	0.35

(Table 8 continued on next page)

[1] 1980 Bureau of the Census estimates.

[2] Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover; excludes land currently developed for nonforest use such as urban or heavily settled residential or resort areas, city parks, orchards, improved roads, or improved pasture land. The minimum forest area classified was 1 acre. Classified as forest were roadside, streamside, and shelterbelt strips of timber with a crown width of at least 120 feet and unimproved roads and trails, streams, and clearings in forested areas if less than 120 feet wide.

[3] Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive public forest land withdrawn from commercial timber production through statute or administrative regulation.

[4] Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

(Table 8 continued)

County	All land[1/]	Forest land[2/]			Commercial forest as a percent of land area	All forest as a percent of land area	Sampling error for commercial forest land (percent)
		All forest	Noncommercial[3/]	Commercial[4/]			
SOUTHWEST UNIT							
Buffalo	447.6	193.4	5.5	187.9	42	43	1.26
Crawford	362.1	168.8	1.0	167.8	46	47	1.34
Dunn	546.2	171.1	1.1	170.0	31	31	1.33
Grant	732.2	186.4	1.9	184.5	25	26	1.27
Iowa	486.5	140.7	4.7	136.0	28	29	1.48
La Crosse	292.6	121.6	—	121.6	42	42	1.57
Lafayette	405.9	38.2	0.6	37.6	9	9	2.82
Pepin	147.8	53.9	0.5	53.4	36	37	2.37
Pierce	369.0	102.1	1.5	100.6	27	28	1.72
Richland	374.1	159.4	0.7	158.7	42	43	1.37
St.Croix	462.5	77.7	4.8	72.9	16	17	2.03
Sauk	536.2	192.0	10.3	181.7	34	36	1.28
Tempealeau	470.9	151.1	4.1	147.0	31	32	1.43
Vernon	516.9	202.4	2.1	200.3	39	39	1.22
All counties	6,150.5	1,958.8	38.8	1,920.0	31	32	0.39
SOUTHEAST UNIT							
Brown	335.5	49.1	1.7	47.4	14	15	1.83
Calumet	208.9	25.1	0.4	24.7	12	12	2.54
Columbia	493.5	84.4	0.2	84.2	17	17	1.37
Dane	770.9	91.1	0.9	90.2	12	12	1.32
Dodge	567.9	27.8	0.2	27.6	5	5	2.39
Door	314.5	120.0	13.7	106.3	34	38	1.22
Fond du Lac	463.8	35.1	1.2	33.9	7	8	2.16
Green	373.3	30.9	--	30.9	8	8	2.26
Green Lake	228.2	21.0	—	21.0	9	9	2.74
Jefferson	359.6	29.3	0.3	29.0	8	8	2.34
Kenosha	174.5	11.7	0.9	10.8	6	7	3.83
Kewaunee	219.5	36.8	—	36.8	17	17	2.07
Manitowoc	380.1	57.4	0.9	56.5	15	15	1.67
Milwaukee	154.6	5/	--	--	--	--	--
Outagamie	411.0	70.7	—	70.7	17	17	1.49
Ozaukee	150.3	16.3	—	16.3	11	11	3.12
Racine	214.1	17.7	0.8	16.9	8	8	3.06
Rock	463.0	28.1	1.2	26.9	6	6	2.43
Sheboygan	329.8	52.6	1.1	51.5	16	16	1.74
Walworth	355.6	35.8	0.2	35.6	10	10	2.10
Washington	275.5	45.8	0.1	45.7	17	17	1.85
Waukesha	354.8	36.6	4.5	32.1	9	10	2.22
Winnebago	287.6	14.2	--	14.2	5	5	3.34
All counties	7,886.5	937.5	28.3	909.2	12	12	0.42
State total	34,832.8	15,351.3	591.9	14,759.4	42	44	0.22

[1/] 1980 Bureau of the Census estimates.

[2/] Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover; excludes land currently developed for nonforest use such as urban or heavily settled residential or resort areas, city parks, orchards, improved roads, or improved pasture land. The minimum forest area classified was 1 acre. Classified as forest were roadside, streamside, and shelterbelt strips of timber with a crown width of at least 120 feet and unimproved roads and trails, streams, and clearings in forested areas if less than 120 feet wide.

[3/] Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive public forest land withdrawn from commercial timber production through statute or administrative regulation.

[4/] Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

[5/] All of Milwaukee County was classified as nonforest urban land.

Table 9.--Area of commercial forest land by forest type and physiographic class, Wisconsin, 1983

(In thousand acres)

Forest type	All classes	Physiographic class				
		Xeric	Xeromesic	Mesic	Hydromesic	Hydric
Jack pine	546.5	29.0	361.0	114.0	39.1	3.4
Red pine	478.2	1.9	271.8	204.5	--	--
White pine	225.6	--	35.0	161.2	23.7	5.7
Balsam fir	419.4	--	6.8	143.2	188.2	81.2
White spruce	61.4	--	2.5	44.8	14.1	--
Black spruce	273.0	--	--	13.6	61.6	197.8
Northern white-cedar	370.7	--	1.8	22.5	164.6	181.8
Tamarack	222.7	--	--	6.8	76.0	139.9
Oak-hickory	2,858.7	20.2	546.5	2,194.7	93.6	3.7
Elm-ash-soft maple	1,240.6	--	4.4	77.5	985.0	173.7
Maple-birch	3,996.9	3.2	54.0	3,695.4	236.9	7.4
Aspen	3,261.5	--	159.0	2,314.5	741.3	46.7
Paper birch	641.6	--	16.6	487.2	117.6	20.2
Exotic	2.2	--	2.2	--	--	--
Nonstocked	160.4	1.8	24.2	68.7	44.4	21.3
All types	14,759.4	56.1	1,485.8	9,548.6	2,786.1	882.8

Table 10.--Area of commercial forest land by ownership class and site class, Wisconsin, 1983

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
National Forest	1,242.3	--	--	65.2	376.9	575.0	225.2
Miscellaneous federal	176.2	--	--	--	32.9	70.6	72.7
State	569.4	--	--	17.4	98.1	241.1	212.8
County and municipal	2,179.8	--	--	41.0	434.1	1,029.9	674.8
Indian	353.7	--	--	10.9	81.6	190.7	70.5
Forest industry	1,156.0	--	--	24.9	229.2	486.9	415.0
Farmer	3,513.7	--	--	117.4	833.3	1,450.1	1,112.9
Misc. private-corp.	665.9	--	2.2	15.6	136.8	295.4	215.9
Misc. private-indiv.	4,902.4	--	4.2	161.9	1,042.7	2,166.3	1,527.3
All owners	14,759.4	--	6.4	454.3	3,265.6	6,506.0	4,527.1

Table 11.--Area of commercial forest land by ownership class and stand-volume class, Wisconsin, 1983

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1/])		
		Less than 1,500	1,500 to 5,000	5,000+
National Forest	1,242.3	480.3	599.3	162.7
Miscellaneous federal	176.2	104.9	52.4	18.9
State	569.4	275.3	216.5	77.6
County and municipal	2,179.8	1,187.7	812.2	179.9
Indian	353.7	71.7	118.7	163.3
Forest industry	1,156.0	538.2	422.9	194.9
Farmer	3,513.7	1,406.4	1,468.8	638.5
Misc. private-corp.	665.9	284.4	301.7	79.8
Misc. private-indiv.	4,902.4	2,338.1	1,938.8	625.5
All owners	14,759.4	6,687.0	5,931.3	2,141.1

[1/] International 1/4-inch rule.

Table 12.--Area of privately owned commercial forest land by ownership class, owner tenure, and size of holding, Wisconsin, 1983

(In thousand acres)

Ownership class and owner tenure class	All sizes	Size of holding (acres) 1-4	5-10	11-20	21-50	51-100	101-500	501-1,500	2,501-5,000	5,001+
Forest Industry										
1-4 years	78.6	--	--	--	--	3.5	1.9	11.2	1.8	60.2
5-9 years	134.1	--	--	--	--	4.2	2.0	9.2	1.7	117.0
10-19 years	331.1	--	--	--	5.0	--	2.0	14.4	7.1	302.6
20+ years	612.2	--	--	--	--	2.3	2.3	3.6	5.3	598.7
All classes	1,156.0	--	--	--	5.0	10.0	8.2	38.4	15.9	1,078.5
Farmer										
1-4 years	644.3	2.5	11.1	69.6	156.8	171.2	219.7	10.2	3.2	--
5-9 years	688.5	15.8	16.3	71.0	186.3	184.5	200.7	13.9	--	--
10-19 years	1,141.2	17.2	33.5	103.1	294.1	309.6	369.2	12.7	1.8	--
20+ years	1,039.7	16.6	40.5	103.6	264.4	289.2	312.6	11.1	1.7	--
All classes	3,513.7	52.1	101.4	347.3	901.6	954.5	1,102.2	47.9	6.7	--
Miscellaneous private corporation										
1-4 years	135.7	3.2	2.4	--	33.7	22.9	37.8	11.2	1.8	22.7
5-9 years	101.7	--	--	--	16.9	16.5	35.5	18.9	4.1	9.8
10-19 years	155.9	2.5	4.8	--	14.8	34.4	44.6	32.0	7.0	15.8
20+ years	272.6	--	--	3.9	15.1	21.6	62.9	78.3	24.9	65.9
All classes	665.9	5.7	7.2	3.9	80.5	95.4	180.8	140.4	37.8	114.2
Miscellaneous private individual										
1-4 years	1,260.6	30.3	60.3	98.7	452.7	314.3	286.9	13.7	1.8	1.9
5-9 years	1,186.5	38.0	66.2	96.9	389.1	293.8	279.9	22.6	--	--
10-19 years	1,434.2	37.3	58.3	82.6	438.4	340.9	411.7	61.6	3.4	--
20+ years	1,021.1	16.6	22.6	54.5	303.0	266.3	307.5	47.7	--	2.9
All classes	4,902.4	122.2	207.4	332.7	1,583.2	1,215.3	1,286.0	145.6	5.2	4.8
All private owners										
1-4 years	2,119.2	36.0	73.8	168.3	643.2	511.9	546.3	46.3	8.6	84.8
5-9 years	2,110.8	53.8	82.5	167.9	592.3	499.0	518.1	64.6	5.8	126.8
10-19 years	3,062.4	57.0	96.6	185.7	752.3	684.9	827.5	120.7	19.3	318.4
20+ years	2,945.6	33.2	63.1	162.0	582.5	579.4	685.3	140.7	31.9	667.5
All classes	10,238.0	180.0	316.0	683.9	2,570.3	2,275.2	2,577.2	372.3	65.6	1,197.5

Table 13.--Area of commercial forest land by forest type, stand-size class, and ownership class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All owners	Ownership class: National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Jack pine										
Sawtimber	93.9	5.2	4.3	3.5	20.0	4.0	9.1	14.5	4.2	29.1
Poletimber	281.0	44.6	8.9	12.1	73.4	1.6	35.0	21.2	6.5	77.7
Sapling & seedling	171.6	0.5	11.4	17.8	43.8	--	25.0	8.9	10.2	54.0
All stands	546.5	50.3	24.6	33.4	137.2	5.6	69.1	44.6	20.9	160.8
Red pine										
Sawtimber	159.2	70.6	2.1	14.6	18.2	5.4	5.4	9.8	5.9	27.2
Poletimber	193.9	9.3	--	10.9	39.2	3.5	13.6	23.5	17.3	76.6
Sapling & seedling	125.1	23.5	6.9	3.6	23.4	--	30.7	1.9	7.2	27.9
All stands	478.2	103.4	9.0	29.1	80.8	8.9	49.7	35.2	30.4	131.7
White pine										
Sawtimber	157.6	15.2	2.2	4.0	20.5	15.6	11.8	37.2	9.7	41.4
Poletimber	43.9	--	2.2	3.4	1.7	1.8	1.7	5.0	5.3	22.8
Sapling & seedling	24.1	--	2.5	2.2	2.2	--	3.4	6.8	--	7.0
All stands	225.6	15.2	6.9	9.6	24.4	17.4	16.9	49.0	15.0	71.2
Balsam fir										
Sawtimber	116.9	20.9	--	5.4	19.9	2.0	15.9	11.2	2.3	39.3
Poletimber	184.4	38.6	--	10.9	35.2	2.1	10.6	5.8	9.0	72.2
Sapling & seedling	118.1	6.5	--	5.4	16.5	--	15.6	18.6	5.5	50.0
All stands	419.4	66.0	--	21.7	71.6	4.1	42.1	35.6	16.8	161.5
White spruce										
Sawtimber	23.0	19.3	--	--	--	--	2.0	--	--	1.7
Poletimber	20.2	8.7	--	--	--	--	1.7	--	2.1	7.7
Sapling & seedling	18.2	3.2	--	1.7	1.8	--	2.0	--	--	9.5
All stands	61.4	31.2	--	1.7	1.8	--	5.7	--	2.1	18.9
Black spruce										
Sawtimber	7.3	--	--	1.7	3.8	--	--	--	--	1.8
Poletimber	82.0	15.7	--	8.4	18.2	3.6	10.6	2.0	--	23.5
Sapling & seedling	183.7	20.8	2.2	18.0	36.9	--	27.7	17.2	5.3	55.6
All stands	273.0	36.5	2.2	28.1	58.9	3.6	38.3	19.2	5.3	80.9
Northern white-cedar										
Sawtimber	115.3	9.0	--	13.5	17.7	5.3	21.6	7.8	4.4	36.0
Poletimber	206.9	52.9	--	5.4	21.3	10.8	12.9	33.2	5.8	64.6
Sapling & seedling	48.5	3.7	--	--	7.2	1.7	3.5	16.7	1.8	13.9
All stands	370.7	65.6	--	18.9	46.2	17.8	38.0	57.7	12.0	114.5

(Table 13 continued on next page)

(Table 13 continued)

Forest type and stand-size class	All owners	Ownership class								
		National Forest	Misc. federal	State	County & municipal	Indian	Forest industry	Farmer	Misc. priv.-corp.	Misc. priv.-indiv.
Tamarack										
Sawtimber	15.3	--	--	2.1	--	--	3.7	4.0	1.8	3.7
Poletimber	89.0	15.5	--	5.4	10.2	--	5.4	11.1	1.7	39.7
Sapling & seedling	118.4	1.4	--	14.7	11.3	1.6	7.1	26.3	10.2	45.8
All stands	222.7	16.9	--	22.2	21.5	1.6	16.2	41.4	13.7	89.2
Oak-hickory										
Sawtimber	1,526.5	--	8.8	31.6	29.5	17.9	14.5	877.8	80.6	465.8
Poletimber	841.8	42.9	22.4	19.9	127.4	3.4	17.2	266.8	44.7	297.1
Sapling & seedling	490.4	2.3	15.4	17.4	67.6	1.8	46.4	118.0	21.3	200.2
All stands	2,858.7	45.2	46.6	68.9	224.5	23.1	78.1	1,262.6	146.6	963.1
Elm-ash-soft maple										
Sawtimber	415.4	1.8	19.3	23.7	50.6	9.2	24.4	142.1	21.8	122.5
Poletimber	524.8	19.8	5.6	18.4	87.8	3.9	40.1	135.2	16.1	197.9
Sapling & seedling	300.4	3.7	2.8	18.2	31.2	1.8	22.3	80.3	21.3	118.8
All stands	1,240.6	25.3	27.7	60.3	169.6	14.9	86.8	357.6	59.2	439.2
Maple-birch										
Sawtimber	1,543.8	112.0	5.2	51.4	114.2	120.1	193.9	449.0	62.0	436.0
Poletimber	1,749.4	316.3	--	36.7	271.6	41.0	195.9	251.4	79.7	556.8
Sapling & seedling	703.7	3.8	2.2	21.8	81.3	3.4	50.8	257.7	13.7	269.0
All stands	3,996.9	432.1	7.4	109.9	467.1	164.5	440.6	958.1	155.4	1,261.8
Aspen										
Sawtimber	401.6	14.5	6.4	20.1	62.2	14.8	27.0	84.2	14.6	157.8
Poletimber	1,585.9	149.3	17.6	50.5	358.4	49.4	88.3	231.5	74.1	566.8
Sapling & seedling	1,274.0	152.1	16.2	69.4	323.2	18.8	107.1	157.3	55.9	374.0
All stands	3,261.5	315.9	40.2	140.0	743.8	83.0	222.4	473.0	144.6	1,098.6
Paper birch										
Sawtimber	78.9	0.6	--	1.6	6.2	--	1.9	28.5	1.7	38.4
Poletimber	420.2	32.8	3.8	16.9	82.2	5.4	35.9	63.3	34.5	145.4
Sapling & seedling	142.5	5.3	2.3	1.8	27.7	--	1.8	51.4	2.4	49.8
All stands	641.6	38.7	6.1	20.3	116.1	5.4	39.6	143.2	38.6	233.6
Exotic										
Sawtimber	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	--	--	--	--	--	2.2
All stands	2.2	--	--	--	--	--	--	--	--	2.2
Nonstocked	160.4	--	5.5	5.3	16.3	3.8	12.5	36.5	5.3	75.2
All types										
Sawtimber	4,654.7	269.1	48.3	173.2	362.8	194.3	331.2	1,666.1	209.0	1,400.7
Poletimber	6,223.4	746.4	60.5	198.9	1,126.6	126.5	468.9	1,050.0	296.8	2,148.8
Sapling & seedling	3,720.9	226.8	61.9	192.0	674.1	29.1	343.4	761.1	154.8	1,277.7
Nonstocked	160.4	--	5.5	5.3	16.3	3.8	12.5	36.5	5.3	75.2
All stands	14,759.4	1,242.3	176.2	569.4	2,179.8	353.7	1,156.0	3,513.7	665.9	4,902.4

Table 14.--Area of commercial forest land by forest type and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Forest type	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Jack pine	546.5	81.7	247.8	203.1	11.2	2.7
Red pine	478.2	157.8	132.6	135.5	40.1	12.2
White pine	225.6	81.1	36.5	77.9	13.7	16.4
Balsam fir	419.4	187.9	219.6	11.9	--	--
White spruce	61.4	19.8	31.9	2.2	2.5	5.0
Black spruce	273.0	147.5	111.2	11.6	--	2.7
Northern white-cedar	370.7	186.0	107.8	23.3	--	53.6
Tamarack	222.7	63.0	111.5	39.0	--	9.2
Oak-hickory	2,858.7	149.3	415.6	937.6	1,063.4	292.8
Elm-ash-soft maple	1,240.6	235.9	414.9	271.5	117.8	200.5
Maple-birch	3,996.9	1,280.2	1,478.7	506.2	497.9	233.9
Aspen	3,261.5	1,026.7	1,508.3	577.5	85.7	63.3
Paper birch	641.6	191.5	268.8	118.6	54.4	8.3
Exotic	2.2	--	--	2.2	--	--
Nonstocked	160.4	20.1	65.6	32.8	33.3	8.6
All types	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2

Table 15.--Area of commercial forest land by county, stand-size class, and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

County	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
NORTHEAST UNIT					
Florence	244.0	83.3	111.9	45.2	3.6
Forest	492.7	149.7	258.4	84.6	--
Langlade	374.5	85.8	215.8	72.9	--
Lincoln	393.8	61.1	195.8	135.0	1.9
Menominee	213.1	145.0	54.0	12.3	1.8
Marinette	639.7	136.0	309.5	192.4	1.8
Oconto	347.1	84.5	184.9	72.1	5.6
Oneida	497.1	93.9	211.3	188.5	3.4
Shawano	255.2	98.0	115.9	39.3	2.0
Vilas	371.3	115.5	166.8	89.0	--
All counties	3,828.5	1,052.8	1,824.3	931.3	20.1
NORTHWEST UNIT					
Ashland	503.8	135.9	263.6	104.3	--
Barron	158.7	57.5	64.4	34.5	2.3
Bayfield	740.5	144.0	407.2	187.5	1.8
Burnett	317.1	74.5	133.3	101.7	7.6
Douglas	627.9	106.5	301.7	210.3	9.4
Iron	377.9	108.5	192.0	77.4	--
Polk	220.8	64.7	98.4	57.7	--
Price	550.8	97.9	256.6	183.8	12.5
Rusk	363.1	103.0	192.4	63.7	4.0
Sawyer	607.7	162.1	312.9	117.2	15.5
Taylor	354.4	52.0	179.4	112.2	10.8
Washburn	328.1	45.9	183.6	96.9	1.7
All counties	5,150.8	1,152.5	2,585.5	1,347.2	65.6
CENTRAL UNIT					
Adams	234.3	47.2	82.1	100.2	4.8
Chippewa	225.7	66.0	84.1	68.1	7.5
Clark	316.1	71.1	129.1	113.5	2.4
Eau Clarie	154.5	35.7	90.5	28.3	--
Jackson	371.4	92.3	155.8	123.3	--
Juneau	252.1	81.8	105.7	64.6	--
Marathon	358.5	114.5	143.5	93.6	6.9
Marquette	94.3	38.1	22.6	31.4	2.2
Monroe	245.0	99.5	88.8	52.1	4.6
Portage	174.3	50.3	65.6	56.2	2.2
Waupaca	172.6	95.6	51.3	25.7	--
Waushara	145.6	38.1	64.8	40.5	2.2
Wood	206.5	52.3	68.2	86.0	--
All counties	2,950.9	882.5	1,152.1	883.5	32.8

(Table 15 continued on next page)

(Table 15 continued)

County	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
SOUTHWEST UNIT					
Buffalo	187.9	127.1	38.5	19.5	2.8
Crawford	167.8	98.0	30.7	33.5	5.6
Dunn	170.0	75.9	57.6	36.5	--
Grant	184.5	133.2	30.1	21.2	--
Iowa	136.0	65.5	38.1	29.7	2.7
La Crosse	121.6	86.0	19.9	15.7	--
Lafayette	37.6	23.5	2.4	11.7	--
Pepin	53.4	30.9	11.2	11.3	--
Pierce	100.6	46.7	21.8	26.9	5.2
Richland	158.7	75.1	36.2	47.4	--
St. Croix	72.9	11.2	31.4	21.7	8.6
Sauk	181.7	74.5	42.4	62.3	2.5
Trempealeau	147.0	76.2	36.6	31.5	2.7
Vernon	200.3	150.6	25.0	21.5	3.2
All counties	1,920.0	1,074.4	421.9	390.4	33.3
SOUTHEAST UNIT					
Brown	47.4	27.4	10.0	10.0	--
Calumet	24.7	9.9	9.9	4.9	--
Columbia	84.2	37.1	29.8	17.3	--
Dane	90.2	73.8	11.0	5.4	--
Dodge	27.6	16.0	4.6	7.0	--
Door	106.3	37.9	30.1	35.5	2.8
Fond du Lac	33.9	21.2	4.2	8.5	--
Green	30.9	26.1	4.8	--	--
Green Lake	21.0	9.4	11.6	--	--
Jefferson	29.0	23.8	2.6	2.6	--
Kenosha	10.8	5.4	5.4	--	--
Kewaunee	36.8	23.7	13.1	--	--
Manitowoc	56.5	32.4	16.1	8.0	--
Milwaukee	--	--	--	--	--
Outagamie	70.7	27.9	25.0	15.3	2.5
Ozaukee	16.3	3.2	6.6	6.5	--
Racine	16.9	6.8	--	10.1	--
Rock	26.9	19.5	4.9	2.5	--
Sheboygan	51.5	13.6	24.5	13.4	--
Walworth	35.6	35.6	--	--	--
Washington	45.7	12.9	19.6	9.9	3.3
Waukesha	32.1	20.3	3.0	8.8	--
Winnebago	14.2	8.6	2.8	2.8	--
All counties	909.2	492.5	239.6	168.5	8.6
State total	14,759.4	4,654.7	6,223.4	3,720.9	160.4

Table 16.--Area of commercial forest land by forest type, stand-size class, and site class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year)					
		225+	165-224	120-164	85-119	50-84	20-49
Jack pine							
Sawtimber	93.9	--	--	--	7.0	51.7	35.2
Poletimber	281.0	--	--	--	20.6	153.1	107.3
Sapling & seedling	171.6	--	--	1.9	9.8	69.9	90.0
All stands	546.5	--	--	1.9	37.4	274.7	232.5
Red pine							
Sawtimber	159.2	--	--	45.5	69.6	39.9	4.2
Poletimber	193.9	--	4.4	72.1	102.8	13.0	1.6
Sapling & seedling	125.1	--	--	12.3	42.8	55.1	14.9
All stands	478.2	--	4.4	129.9	215.2	108.0	20.7
White pine							
Sawtimber	157.6	--	--	25.4	66.7	43.9	21.6
Poletimber	43.9	--	--	13.6	10.7	11.8	7.8
Sapling & seedling	24.1	--	--	1.8	11.4	10.9	--
All stands	225.6	--	--	40.8	88.8	66.6	29.4
Balsam fir							
Sawtimber	116.9	--	--	52.5	35.7	19.8	8.9
Poletimber	184.4	--	--	50.9	73.1	38.1	22.3
Sapling & seedling	118.1	--	2.0	31.1	37.2	22.8	25.0
All stands	419.4	--	2.0	134.5	146.0	80.7	56.2
White spruce							
Sawtimber	23.0	--	--	--	16.4	6.6	--
Poletimber	20.2	--	--	--	10.9	9.3	--
Sapling & seedling	18.2	--	--	--	3.8	6.1	8.3
All stands	61.4	--	--	--	31.1	22.0	8.3
Black spruce							
Sawtimber	7.3	--	--	--	--	1.8	5.5
Poletimber	82.0	--	--	--	6.8	9.6	65.6
Sapling & seedling	183.7	--	--	--	8.2	12.2	163.3
All stands	273.0	--	--	--	15.0	23.6	234.4
Northern white-cedar							
Sawtimber	115.3	--	--	--	4.6	32.7	78.0
Poletimber	206.9	--	--	--	--	48.4	158.5
Sapling & seedling	48.5	--	--	--	--	9.7	38.8
All stands	370.7	--	--	--	4.6	90.8	275.3

(Table 16 continued on next page)

(Table 16 continued)

Forest type and stand-size class	All classes	Site class (cubic feet of growth per acre per year) 225+	165-224	120-164	85-119	50-84	20-49
Tamarack							
Sawtimber	15.3	--	--	--	1.9	5.7	7.7
Poletimber	89.0	--	--	--	4.1	43.7	41.2
Sapling & seedling	118.4	--	--	--	4.1	44.3	70.0
All stands	222.7	--	--	--	10.1	93.7	118.9
Oak-hickory							
Sawtimber	1,526.5	--	--	10.0	294.8	745.5	476.2
Poletimber	841.8	--	--	--	137.4	473.0	231.4
Sapling & seedling	490.4	--	--	2.5	74.0	234.3	179.6
All stands	2,858.7	--	--	12.5	506.2	1,452.8	887.2
Elm-ash-soft maple							
Sawtimber	415.4	--	--	--	52.4	121.8	241.2
Poletimber	524.8	--	--	--	56.8	137.9	330.1
Sapling & seedling	300.4	--	--	--	13.4	74.2	212.8
All stands	1,240.6	--	--	--	122.6	333.9	784.1
Maple-birch							
Sawtimber	1,543.8	--	--	16.5	266.2	792.7	468.4
Poletimber	1,749.4	--	--	18.9	342.8	941.2	446.5
Sapling & seedling	703.7	--	--	16.0	100.9	318.7	268.1
All stands	3,996.9	--	--	51.4	709.9	2,052.6	1,183.0
Aspen							
Sawtimber	401.6	--	--	19.0	192.6	169.3	20.7
Poletimber	1,585.9	--	--	35.6	686.2	744.4	119.7
Sapling & seedling	1,274.0	--	--	16.7	415.3	634.8	207.2
All stands	3,261.5	--	--	71.3	1,294.1	1,548.5	347.6
Paper birch							
Sawtimber	78.9	--	--	5.1	15.0	31.6	27.2
Poletimber	420.2	--	--	5.2	34.0	212.2	168.8
Sapling & seedling	142.5	--	--	--	17.6	53.2	71.7
All stands	641.6	--	--	10.3	66.6	297.0	267.7
Exotic							
Sawtimber	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	2.2	--	--
All stands	2.2	--	--	--	2.2	--	--
Nonstocked	160.4	--	--	1.7	15.8	61.1	81.8
All types							
Sawtimber	4,654.7	--	--	174.0	1,022.9	2,063.0	1,394.8
Poletimber	6,223.4	--	4.4	196.3	1,486.2	2,835.7	1,700.8
Sapling & seedling	3,720.9	--	2.0	82.3	740.7	1,546.2	1,349.7
Nonstocked	160.4	--	--	1.7	15.8	61.1	81.8
All stands	14,759.4	--	6.4	454.3	3,265.6	6,506.0	4,527.1

Table 17.--Area of commercial forest land by forest type and stand-age class, Wisconsin, 1983

(In thousand acres)

Forest type	All ages	Stand-age class (years) 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Jack pine	546.5	34.2	98.6	73.7	116.9	145.2	57.4	9.4	9.2	1.9	--	--	--	--
Red pine	478.2	53.9	104.4	108.3	97.3	54.6	23.9	7.3	7.8	7.0	10.5	3.2	--	--
White pine	225.6	12.6	18.6	10.8	18.3	22.5	22.3	24.7	30.6	31.0	4.3	10.1	8.1	11.7
White spruce	419.4	48.9	30.7	44.6	48.4	49.5	100.8	51.6	14.1	12.9	3.5	7.5	5.0	1.9
Balsam fir	61.4	7.1	12.7	10.7	13.9	6.5	8.5	2.0	--	--	--	--	--	--
Black spruce	273.0	29.1	41.9	71.1	35.7	27.6	14.3	14.3	24.7	8.8	3.6	--	1.9	--
Northern white-cedar	370.7	9.8	14.5	18.4	7.7	47.9	33.0	38.6	29.8	37.7	57.8	30.8	21.5	23.2
Tamarack	222.7	20.7	50.4	40.2	13.6	21.5	17.1	19.4	15.8	14.9	1.7	3.8	1.8	1.8
Oak-hickory	2,858.7	297.3	149.0	98.2	123.6	337.6	423.5	274.8	283.1	223.8	203.0	208.9	145.8	90.1
Elm-ash-soft maple	1,240.6	132.0	117.9	86.0	118.9	160.6	123.6	133.1	129.7	89.2	59.9	50.2	28.7	10.8
Maple-birch	3,996.9	304.0	273.6	232.7	258.1	612.3	681.9	479.6	241.5	239.1	201.9	215.9	128.0	128.3
Aspen	3,261.5	651.3	451.0	312.4	471.1	702.5	404.9	154.2	71.6	37.4	5.1	--	--	--
Paper birch	641.6	56.9	53.5	59.5	95.3	148.7	130.4	76.0	15.3	1.9	0.3	3.8	--	--
Exotic	2.2	--	2.2	--	--	--	--	--	--	--	--	--	--	--
Nonstocked	160.4	160.4	--	--	--	--	--	--	--	--	--	--	--	--
All types	14,759.4	1,818.2	1,419.0	1,166.6	1,418.8	2,337.0	2,041.6	1,285.0	873.2	705.6	551.6	534.2	340.8	267.8

Table 18.--Area of commercial forest land by forest type, site-index class, and Forest Survey Unit, Wisconsin, 1983

(In thousand acres)

Forest type	All classes	Site-index class (feet)								
		11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
ALL UNITS										
Jack pine	546.5	--	1.7	8.2	72.8	174.3	202.9	74.2	10.5	1.9
Red pine	478.2	--	--	8.6	7.6	78.9	161.8	154.3	62.6	4.4
White pine	225.6	--	--	6.4	25.7	61.7	71.1	35.0	23.1	2.6
Balsam fir	419.4	3.2	7.0	46.0	111.7	115.0	103.6	22.1	8.8	2.0
White spruce	61.4	--	--	2.8	11.8	12.1	10.7	24.0	--	--
Black spruce	273.0	--	72.1	96.2	66.1	23.6	11.6	3.4	--	--
Northern white-cedar	370.7	6.9	116.2	97.6	73.8	42.5	29.1	2.7	1.9	--
Tamarack	222.7	--	20.0	46.3	52.6	51.4	42.3	6.0	4.1	--
Oak-hickory	2,858.7	--	--	127.3	392.2	795.2	745.1	513.4	221.8	63.7
Elm-ash-soft maple	1,240.6	--	7.2	75.8	192.2	355.4	300.8	186.6	101.6	21.0
Maple-birch	3,996.9	--	--	40.0	252.2	890.8	1,316.4	994.1	416.3	87.1
Aspen	3,261.5	--	--	19.1	162.4	502.5	955.1	1,099.1	452.0	71.3
Paper birch	641.6	--	--	8.0	48.9	153.0	213.5	141.3	66.6	10.3
Exotic	2.2	--	--	--	--	--	--	2.2	--	--
Nonstocked	160.4	--	3.8	17.4	28.0	46.8	31.2	25.8	4.7	2.7
All types	14,759.4	10.1	228.0	599.7	1,498.0	3,303.2	4,195.2	3,284.2	1,374.0	267.0
NORTHEAST UNIT										
Jack pine	81.7	--	1.7	1.6	8.8	23.0	25.7	17.5	3.4	--
Red pine	157.8	--	--	--	3.6	29.3	53.7	51.3	19.9	--
White pine	81.1	--	--	1.7	10.3	19.6	26.7	12.2	10.6	--
Balsam fir	187.9	--	5.3	27.3	44.2	50.4	47.7	11.0	2.0	--
White spruce	19.8	--	--	--	5.4	8.3	--	6.1	--	--
Black spruce	147.5	--	38.3	46.6	37.2	15.2	6.8	3.4	--	--
Northern white-cedar	186.0	3.4	65.9	58.2	24.9	22.7	9.0	--	1.9	--
Tamarack	63.0	--	7.1	18.1	10.8	25.3	1.7	--	--	--
Oak-hickory	149.3	--	--	--	5.3	34.0	39.2	41.7	23.4	5.7
Elm-ash-soft maple	235.9	--	--	24.1	39.5	77.1	58.3	18.6	18.3	--
Maple-birch	1,280.2	--	--	11.3	73.3	255.9	446.1	362.1	114.6	16.9
Aspen	1,026.7	--	--	9.3	58.2	178.7	305.0	343.3	119.5	12.7
Paper birch	191.5	--	--	--	12.5	44.4	77.2	50.0	7.4	--
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	20.1	--	2.0	1.8	5.4	5.6	1.9	3.4	--	--
All types	3,828.5	3.4	120.3	200.0	339.4	789.5	1,099.0	920.6	321.0	35.3
NORTHWEST UNIT										
Jack pine	247.8	--	--	1.9	36.9	76.8	104.6	21.0	4.7	1.9
Red pine	132.6	--	--	1.8	1.8	30.3	57.1	33.3	8.3	--
White pine	36.5	--	--	--	3.7	20.3	9.1	--	3.4	--
Balsam fir	219.6	3.2	1.7	18.7	60.4	62.2	53.5	11.1	6.8	2.0
White spruce	31.9	--	--	--	1.7	3.8	10.7	15.7	--	--
Black spruce	111.2	--	33.8	47.2	21.6	3.8	4.8	--	--	--
Northern white-cedar	107.8	3.5	32.8	13.9	36.3	8.5	12.8	--	--	--
Tamarack	111.5	--	12.9	23.7	30.6	14.5	24.5	3.6	1.7	--
Oak-hickory	415.6	--	--	12.6	41.6	136.3	115.7	92.0	17.4	--
Elm-ash-soft maple	414.9	--	1.8	33.1	99.5	140.0	75.2	43.8	21.5	--
Maple-birch	1,478.7	--	--	12.5	88.4	346.4	528.9	356.8	129.4	16.3
Aspen	1,508.3	--	--	4.3	54.1	190.3	437.7	550.0	247.1	24.8
Paper birch	268.8	--	--	5.7	20.2	69.5	91.3	52.3	27.9	1.9
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	65.6	--	1.8	5.6	14.5	18.5	14.4	8.9	1.9	--
All types	5,150.8	6.7	84.8	181.0	511.3	1,121.2	1,540.3	1,188.5	470.1	46.9

(Table 18 continued on next page)

(Table 18 continued)

Forest type	All classes	Site-index class (feet) 11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
CENTRAL UNIT										
Jack pine	203.1	--	--	4.7	24.6	63.1	72.6	35.7	2.4	--
Red pine	135.5	--	--	6.8	2.2	19.3	35.9	46.3	20.6	4.4
White pine	77.9	--	--	2.3	11.7	16.4	27.2	13.6	6.7	--
Balsam fir	11.9	--	--	--	7.1	2.4	2.4	--	--	--
White spruce	2.2	--	--	--	2.2	--	--	--	--	--
Black spruce	11.6	--	--	2.4	4.6	4.6	--	--	--	--
Northern white-cedar	23.3	--	6.9	9.4	4.6	--	2.4	--	--	--
Tamarack	39.0	--	--	4.5	11.2	11.6	6.9	2.4	2.4	--
Oak-hickory	937.6	--	--	54.6	131.8	277.5	267.5	123.7	71.3	11.2
Elm-ash-soft maple	271.5	--	--	2.2	23.2	78.8	94.3	47.3	25.7	--
Maple-birch	506.2	--	--	4.8	26.7	118.2	176.1	106.3	60.2	13.9
Aspen	577.5	--	--	--	35.2	122.8	188.2	147.2	60.8	23.3
Paper birch	118.6	--	--	2.3	13.7	25.3	28.7	25.5	20.8	2.3
Exotic	2.2	--	--	--	--	--	--	2.2	--	--
Nonstocked	32.8	--	--	4.5	2.3	11.9	9.2	4.9	--	--
All types	2,950.9	--	6.9	98.5	301.1	751.9	911.4	555.1	270.9	55.1
SOUTHWEST UNIT										
Jack pine	11.2	--	--	--	2.5	8.7	--	--	--	--
Red pine	40.1	--	--	--	--	--	12.9	13.4	13.8	--
White pine	13.7	--	--	--	--	2.6	5.9	2.6	--	2.6
Balsam fir	--	--	--	--	--	--	--	--	--	--
White spruce	2.5	--	--	--	2.5	--	--	--	--	--
Black spruce	--	--	--	--	--	--	--	--	--	--
Northern white-cedar	--	--	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--	--	--
Oak-hickory	1,063.4	--	--	35.6	148.7	272.0	257.9	217.5	89.9	41.8
Elm-ash-soft maple	117.8	--	--	5.3	5.6	25.1	37.1	22.8	13.2	8.7
Maple-birch	497.9	--	--	8.9	51.4	113.5	104.1	116.6	81.1	22.3
Aspen	85.7	--	--	2.7	11.5	2.8	8.2	33.1	19.4	8.0
Paper birch	54.4	--	--	--	--	13.8	10.5	13.5	10.5	6.1
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	33.3	--	--	5.5	2.5	5.5	5.7	8.6	2.8	2.7
All types	1,920.0	--	--	58.0	224.7	444.0	442.3	428.1	230.7	92.2
SOUTHEAST UNIT										
Jack pine	2.7	--	--	--	--	2.7	--	--	--	--
Red pine	12.2	--	--	--	--	--	2.2	10.0	--	--
White pine	16.4	--	--	2.4	--	2.8	2.2	6.6	2.4	--
Balsam fir	--	--	--	--	--	--	--	--	--	--
White spruce	5.0	--	--	2.8	--	--	--	2.2	--	--
Black spruce	2.7	--	--	--	2.7	--	--	--	--	--
Northern white-cedar	53.6	--	10.6	16.1	8.0	11.3	4.9	2.7	--	--
Tamarack	9.2	--	--	--	--	--	9.2	--	--	--
Oak-hickroy	292.8	--	--	24.5	64.8	75.4	64.8	38.5	19.8	5.0
Elm-ash-soft maple	200.5	--	5.4	11.1	24.4	34.4	35.9	54.1	22.9	12.3
Maple-birch	233.9	--	--	2.5	12.4	56.8	61.2	52.3	31.0	17.7
Aspen	63.3	--	--	2.8	3.4	7.9	16.0	25.5	5.2	2.5
Paper birch	8.3	--	--	--	2.5	--	5.8	--	--	--
Exotic	--	--	--	--	--	--	--	--	--	--
Nonstocked	8.6	--	--	--	3.3	5.3	--	--	--	--
All types	909.2	--	16.0	62.2	121.5	196.6	202.2	191.9	81.3	37.5

Table 19.--Area of commercial forest land by forest type, stand-size class, and basal-area class, Wisconsin, 1983

(In thousand acres)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Jack pine															
Sawtimber	93.9	--	--	--	7.9	3.6	9.8	9.5	12.8	16.1	8.0	17.2	7.2	1.8	--
Poletimber	281.0	--	--	--	4.2	10.0	22.4	22.6	51.1	44.7	64.9	38.5	18.5	1.9	2.2
Sapling & seedling	171.6	21.0	6.8	24.7	16.7	20.4	16.1	20.6	39.7	3.8	1.8	--	--	--	--
All stands	546.5	21.0	6.8	24.7	28.8	34.0	48.3	52.7	103.6	64.6	74.7	55.7	25.7	3.7	2.2
Red pine															
Sawtimber	159.2	--	--	--	2.8	2.0	1.9	--	7.3	9.4	11.4	46.8	43.4	27.0	7.2
Poletimber	193.9	--	--	--	--	3.4	6.1	6.5	8.5	19.9	6.8	42.3	42.0	22.4	36.0
Sapling & seedling	125.1	55.5	10.7	8.6	6.0	4.6	15.8	--	5.7	9.9	1.6	4.2	2.5	--	--
All stands	478.2	55.5	10.7	8.6	8.8	10.0	23.8	6.5	21.5	39.2	19.8	93.3	87.9	49.4	43.2
White pine															
Sawtimber	157.6	--	2.5	1.9	7.6	1.7	7.6	1.7	8.8	13.5	11.9	41.2	33.5	16.8	8.9
Poletimber	43.9	--	--	--	--	1.7	2.2	--	5.2	6.0	5.8	13.0	5.4	4.6	--
Sapling & seedling	24.1	5.4	5.1	--	--	2.2	5.7	--	5.7	--	--	--	--	--	--
All stands	225.6	5.4	7.6	1.9	7.6	5.6	15.5	1.7	19.7	19.5	17.7	54.2	38.9	21.4	8.9
Balsam fir															
Sawtimber	116.9	--	--	--	--	8.2	19.7	5.5	10.0	7.3	8.5	21.6	26.8	3.7	5.6
Poletimber	184.4	--	--	1.8	--	3.5	14.6	12.1	7.5	18.7	7.3	36.6	47.8	22.0	12.5
Sapling & seedling	118.1	11.0	10.6	13.7	7.3	13.2	13.8	17.1	17.0	1.9	5.6	3.3	1.9	1.7	--
All stands	419.4	11.0	10.6	15.5	7.3	24.9	48.1	34.7	34.5	27.9	21.4	61.5	76.5	27.4	18.1
White spruce															
Sawtimber	23.0	--	--	--	--	--	--	2.7	--	--	--	--	--	10.3	10.0
Poletimber	20.2	--	--	--	--	--	--	--	--	3.8	2.2	1.7	8.7	3.8	--
Sapling & seedling	18.2	4.2	2.8	1.8	--	3.6	3.6	--	2.2	--	--	--	--	--	--
All stands	61.4	4.2	2.8	1.8	--	3.6	3.6	2.7	2.2	3.8	2.2	1.7	8.7	14.1	10.0
Black spruce															
Sawtimber	7.3	--	1.9	--	--	--	--	3.6	--	--	--	--	1.8	--	--
Poletimber	82.0	--	--	3.6	--	--	9.3	7.5	13.0	8.7	17.5	7.8	12.8	1.8	--
Sapling & seedling	183.7	11.3	11.1	35.7	9.2	40.5	12.7	18.1	20.4	10.8	3.7	5.9	4.3	--	--
All stands	273.0	11.3	13.0	39.3	9.2	40.5	22.0	29.2	33.4	19.5	21.2	13.7	18.9	1.8	--
Northern white-cedar															
Sawtimber	115.3	--	--	--	--	5.3	2.0	5.3	8.6	7.5	3.5	7.6	24.9	24.9	25.7
Poletimber	206.9	--	--	--	--	--	1.8	--	8.9	11.4	1.6	43.1	30.1	61.0	49.0
Sapling & seedling	48.5	1.8	2.9	7.0	2.7	5.3	3.5	--	8.4	2.7	--	8.9	--	5.3	--
All stands	370.7	1.8	2.9	7.0	2.7	10.6	7.3	5.3	25.9	21.6	5.1	59.6	55.0	91.2	74.7

(Table 19 continued on next page)

(Table 19 continued)

Forest type and stand-size class	All classes	Basal area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Tamarack															
Sawtimber	15.3	--	1.8	4.3	--	1.8	3.7	1.8	--	--	--	1.9	--	--	--
Poletimber	89.0	--	1.9	3.7	2.4	11.5	11.1	15.1	1.9	21.7	8.6	9.3	1.8	--	--
Sapling & seedling	118.4	24.3	11.8	13.4	12.6	15.7	16.6	5.8	11.0	1.8	5.4	--	--	--	--
All stands	222.7	24.3	15.5	21.4	15.0	29.0	31.4	22.7	12.9	23.5	14.0	11.2	1.8	--	--
Oak-hickory															
Sawtimber	1,526.5	--	2.4	15.4	26.8	65.4	86.5	114.3	169.7	214.5	144.2	371.4	247.7	59.3	8.9
Poletimber	841.8	--	--	3.5	7.6	8.6	77.6	47.2	100.4	122.9	109.6	178.3	134.3	46.7	5.1
Sapling & seedling	490.4	52.0	48.1	89.5	60.4	73.3	74.9	26.8	18.9	17.0	11.0	13.1	5.4	--	--
All stands	2,858.7	52.0	50.5	108.4	94.8	147.3	239.0	188.3	289.0	354.4	264.8	562.8	387.4	106.0	14.0
Elm-ash-soft maple															
Sawtimber	415.4	--	4.7	15.0	18.2	20.9	38.6	16.4	30.5	43.9	37.6	71.9	74.6	33.0	10.1
Poletimber	524.8	--	10.1	21.9	23.3	36.1	50.2	37.1	67.6	66.3	37.6	64.5	77.6	28.1	4.4
Sapling & seedling	300.4	31.8	44.3	39.3	42.5	40.0	40.6	17.5	16.7	11.7	9.1	2.4	4.5	--	--
All stands	1,240.6	31.8	59.1	76.2	84.0	97.0	129.4	71.0	114.8	121.9	84.3	138.8	156.7	61.1	14.5
Maple-birch															
Sawtimber	1,543.8	--	--	8.9	7.7	44.9	66.5	61.5	137.2	148.3	128.5	336.0	417.8	151.0	35.5
Poletimber	1,749.4	--	--	4.9	19.0	37.8	77.1	81.6	156.5	244.9	155.2	422.7	386.7	140.1	22.9
Sapling & seedling	703.7	49.5	83.2	87.2	62.5	96.2	91.5	49.8	54.5	46.8	19.6	46.1	11.2	5.6	--
All stands	3,996.9	49.5	83.2	101.0	89.2	178.9	235.1	192.9	348.2	440.0	303.3	804.8	815.7	296.7	58.4
Aspen															
Sawtimber	401.6	--	2.3	7.3	13.1	19.7	33.9	22.7	33.5	56.0	35.1	64.7	88.4	15.4	9.5
Poletimber	1,585.9	--	9.1	29.5	30.7	102.0	142.0	147.7	170.5	227.5	147.6	250.4	241.0	71.4	16.5
Sapling & seedling	1,274.0	176.5	191.2	174.1	142.6	193.0	139.3	82.7	84.6	49.2	20.1	17.1	1.8	1.8	--
All stands	3,261.5	176.5	202.6	210.9	186.4	314.7	315.2	253.1	288.6	332.7	202.8	332.2	331.2	88.6	26.0
Paper birch															
Sawtimber	78.9	--	--	1.8	--	5.6	2.6	10.1	8.7	11.5	3.6	14.5	12.2	5.5	2.8
Poletimber	420.2	--	--	1.9	7.8	18.2	35.2	13.4	35.9	33.6	36.1	82.7	112.2	37.7	5.5
Sapling & seedling	142.5	9.9	22.9	14.6	13.4	23.0	19.8	12.6	5.4	6.1	5.5	7.6	1.7	--	--
All stands	641.6	9.9	22.9	18.3	21.2	46.8	57.6	36.1	50.0	51.2	45.2	104.8	126.1	43.2	8.3
Exotic															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	2.2	--	--	--	--	--	--	--	2.2	--	--	--	--	--	--
All stands	2.2	--	--	--	--	--	--	--	2.2	--	--	--	--	--	--
Nonstocked	160.4	78.4	26.4	9.2	9.8	3.5	9.2	4.4	5.6	--	8.8	2.7	2.4	--	--
All types															
Sawtimber	4,654.7	--	15.6	54.6	84.1	179.1	272.8	255.1	427.1	528.0	392.3	994.8	978.3	348.7	124.2
Poletimber	6,223.4	--	21.1	70.8	95.0	232.8	449.6	390.8	627.0	830.1	600.8	1,190.9	1,118.9	441.5	154.1
Sapling & seedling	3,720.9	454.2	451.5	509.6	375.9	531.0	453.9	251.0	292.4	161.7	83.4	108.6	33.3	14.4	--
Nonstocked	160.4	78.4	26.4	9.2	9.8	3.5	9.2	4.4	5.6	--	8.8	2.7	2.4	--	--
All stands	14,759.4	532.6	514.6	644.2	564.8	946.4	1,185.5	901.3	1,352.1	1,519.8	1,085.3	2,297.0	2,132.9	804.6	278.3

Table 20.--Area of commercial forest land by stocking class of growing-stock trees and stand-size class, Wisconsin, 1983

(In thousand acres)

Stocking class (percent)	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Less than 16.7	160.4	--	--	--	160.4
16.7 to 60.9	2,633.4	1,027.2	806.1	800.1	--
61.0 to 100.9	6,087.2	1,971.3	2,837.9	1,278.0	--
101.0 to 133.9	4,829.8	1,401.9	2,243.6	1,184.3	--
134.0+	1,048.6	254.3	335.8	458.5	--
All classes	14,759.4	4,654.7	6,223.4	3,720.9	160.4

Table 21.--Area of commercial forest land by stocking class based on selected stand components, Wisconsin, 1983

(In thousand acres)

Stocking class (percent)	Stocking classified in terms of		
	All live trees	Growing-stock trees	Rough and rotten trees
0-10	30.6	54.0	7,344.6
11-20	55.7	155.8	3,762.8
21-30	138.9	357.2	1,873.4
31-40	237.0	487.8	960.1
41-50	364.5	666.2	459.9
51-60	433.2	960.0	208.8
61-70	652.8	1,278.3	103.2
71-80	945.2	1,384.8	17.6
81-90	1,309.4	1,638.1	20.9
91-100	1,824.2	1,758.5	2.1
101-110	1,951.2	1,698.5	4.1
111-120	2,130.5	1,607.3	1.9
121-130	1,954.9	1,328.1	--
131-140	1,454.7	759.0	--
141-150	885.0	413.2	--
151-160	304.4	159.1	--
161+	87.2	53.5	--
All classes	14,759.4	14,759.4	14,759.4

Table 22.--Area of plantations by forest type and stand-age class, Wisconsin, 1983

(In thousand acres)

Forest type	All classes	Stand-age class (years)									
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Jack pine	138.5	5.7	26.3	20.1	33.4	24.6	22.0	4.2	2.2	--	--
Red pine	377.9	52.2	96.7	103.9	71.4	47.5	4.2	2.0	--	--	--
White pine	55.0	7.6	13.9	5.9	6.3	13.4	3.9	2.3	1.7	--	--
White spruce	40.5	4.3	11.0	2.0	12.2	4.4	6.6	--	--	--	--
Black spruce	2.7	--	2.7	--	--	--	--	--	--	--	--
Exotic	2.2	--	2.2	--	--	--	--	--	--	--	--
Nonstocked	5.5	5.5	--	--	--	--	--	--	--	--	--
All types	622.3	75.3	152.8	131.9	123.3	89.9	36.7	8.5	3.9	--	--

Table 23.--Area of commercial forest land with conifer understory by forest type and conifer understory species, Wisconsin, 1983

(In thousand acres)

Forest type	All species	Conifer understory species									
		White pine	Red pine	Jack pine	Balsam fir	White spruce	Black spruce	Hemlock	Northern white-cedar	Eastern redcedar	Other softwoods
Jack pine	256.4	13.0	45.5	185.4	8.6	--	1.7	--	--	--	2.2
Red pine	177.2	18.3	74.0	8.7	62.9	11.7	1.6	--	--	--	--
White pine	121.3	86.9	1.7	--	30.9	--	--	1.8	--	--	--
Balsam fir	232.4	--	--	--	230.7	--	1.7	--	--	--	--
White spruce	12.0	2.8	--	--	1.7	7.5	--	--	--	--	--
Black spruce	181.3	--	--	--	47.3	--	128.2	--	--	--	5.8
Northern white-cedar	204.9	--	--	--	127.5	2.2	--	--	73.4	--	1.8
Tamarack	159.1	--	--	--	31.5	--	40.9	--	6.1	--	80.6
Oak-hickory	429.6	153.6	30.5	141.4	32.1	2.2	--	3.5	2.7	59.0	4.6
Elm-ash-soft maple	274.2	22.4	--	--	196.3	4.6	6.6	10.0	29.7	2.8	1.8
Maple-birch	879.2	122.8	15.4	11.0	582.8	27.6	1.9	87.0	8.5	18.2	4.0
Aspen	860.7	137.2	28.3	38.9	583.5	20.5	30.9	5.9	7.5	2.5	5.5
Paper birch	153.4	17.4	4.0	--	106.7	3.3	5.8	1.8	9.3	2.8	2.3
Exotic	2.2	--	--	--	--	2.2	--	--	--	--	--
Nonstocked	18.0	5.5	4.6	--	5.4	--	--	--	--	2.5	--
All types	3,961.9	579.9	204.0	385.4	2,047.9	81.8	219.3	110.0	137.2	87.8	108.6

Table 24.--Area of commercial forest land by class of water and distance to water, Wisconsin, 1983

(In thousand acres)

Class of water and width or size	All distances	Distance to water (miles)						
		0-.125	.125-.25	.25-1.0	1.0-2.5	2.5-5.0	5.0-10.0	10.0+
Streams								
1-16 feet	816.6	395.9	121.7	233.3	63.2	2.5	--	--
17-33 feet	3,867.3	1,337.1	774.1	1,545.7	196.4	12.0	2.0	--
34-66 feet	1,452.3	391.3	250.1	655.4	131.5	24.0	--	--
67+ feet	943.2	279.1	142.7	373.8	123.1	21.8	2.7	--
All widths	7,079.4	2,403.4	1,288.6	2,808.2	514.2	60.3	4.7	--
Lakes								
1-25 acres	1,584.2	338.0	295.3	722.4	178.5	48.1	1.9	--
26-100 acres	623.4	137.8	88.5	327.0	59.8	10.3	--	--
101-500 acres	374.7	88.6	69.0	173.7	37.1	6.3	--	--
501+ acres	461.7	81.8	54.8	175.9	115.6	30.9	2.7	--
All sizes	3,044.0	646.2	507.6	1,399.0	391.0	95.6	4.6	--
Swamps								
1-10 acres	1,505.8	883.1	277.8	286.0	29.3	29.6	--	--
11-25 acres	540.1	340.8	109.5	83.4	4.0	2.4	--	--
26-100 acres	1,287.5	794.6	220.0	250.5	22.4	--	--	--
101+ acres	762.2	552.9	110.0	95.8	3.5	--	--	--
All sizes	4,095.6	2,571.4	717.3	715.7	59.2	32.0	--	--
Farm ponds								
1-2 acres	397.6	90.9	64.0	215.3	27.4	--	--	--
3-5 acres	83.4	12.2	13.4	45.5	12.3	--	--	--
6+ acres	59.4	14.5	4.0	26.0	7.4	7.5	--	--
All sizes	540.4	117.6	81.4	286.8	47.1	7.5	--	--
All widths and sizes	14,759.4	5,738.6	2,594.9	5,209.7	1,011.5	195.4	9.3	--

Table 25.--Area of commercial forest land by Forest Survey Unit, distance to maintained road, and type of road, Wisconsin, 1983

(In thousand acres)

Type of road and distance to road (miles)	All Units	Forest Survey Unit				
		Northeast	Northwest	Central	Southwest	Southeast
Paved-4 lane						
0-.125	53.5	5.1	15.9	9.1	2.5	20.9
.125-.25	36.5	5.1	11.5	4.5	2.5	12.9
.25-1.0	64.6	14.2	28.7	11.4	2.9	7.4
1.0-2.5	2.5	--	—	--	--	2.5
2.5-5.0	--	--	--	--	--	--
5+	--	--	--	--	--	--
Total	157.1	24.4	56.1	25.0	7.9	43.7
Paved-2 lane						
0-.125	1,476.1	394.1	296.9	428.2	212.2	144.7
.125-.25	1,368.4	256.7	300.8	420.2	230.7	160.0
.25-1.0	2,760.8	744.5	704.3	655.3	418.2	238.5
1.0-2.5	143.9	63.0	59.5	11.5	5.3	4.6
2.5-5.0	--	--	--	--	--	--
5+	--	--	--	--	--	--
Total	5,749.2	1,458.3	1,361.5	1,515.2	866.4	547.8
Improved-gravel						
0-.125	2,502.4	712.4	955.5	440.2	282.9	111.4
.125-.25	1,871.4	451.2	723.7	348.2	292.3	56.0
.25-1.0	4,133.8	1,038.8	1,868.3	605.9	470.5	150.3
1.0-2.5	335.1	136.5	182.2	16.4	--	--
2.5-5.0	7.1	3.6	3.5	--	--	--
5+	--	--	--	--	--	--
Total	8,849.8	2,342.5	3,733.2	1,410.7	1,045.7	317.7
All types of road						
0-.125	4,035.3	1,114.9	1,268.3	877.5	497.6	277.0
.125-.25	3,276.3	713.0	1,036.0	772.9	525.5	228.9
.25-1.0	6,959.2	1,797.5	2,601.3	1,272.6	891.6	396.2
1.0-2.5	481.5	199.5	241.7	27.9	5.3	7.1
2.5-5.0	7.1	3.6	3.5	--	--	--
5+	--	--	--	--	--	--
Total	14,759.4	3,828.5	5,150.8	2,950.9	1,920.0	909.2

Table 26.--Area of commercial forest land by Forest Survey Unit, posting, and setting class, Wisconsin, 1983

(In thousand acres)

Unit and posting	All classes	Setting class					
		Primitive	Semi-primitive nonmotor	Semi-primitive motor	Roaded natural	Rural	Urban
Northeast							
Not posted	3,170.4	3.5	87.1	688.3	1,988.0	392.7	10.8
Locked gate	127.6	--	1.9	28.1	90.4	5.5	1.7
No trespassing	274.6	1.8	1.7	40.6	159.1	69.7	1.7
No hunting	14.4	--	--	3.6	3.7	7.1	--
Other posted signs	34.7	--	--	8.9	22.2	3.6	--
Other evidence	206.8	--	3.5	10.3	84.7	108.3	--
Total	3,828.5	5.3	94.2	779.8	2,348.1	586.9	14.2
Northwest							
Not posted	4,536.1	5.6	252.7	873.7	2,606.3	778.9	18.9
Locked gate	69.1	--	2.6	26.1	36.7	3.7	--
No trespassing	329.4	--	18.6	52.2	164.3	94.3	--
No hunting	29.9	--	--	--	21.9	8.0	--
Other posted signs	40.8	--	4.1	5.4	22.0	9.3	--
Other evidence	145.5	--	2.0	--	47.4	96.1	--
Total	5,150.8	5.6	280.0	957.4	2,898.6	990.3	18.9
Central							
Not posted	1,995.6	2.4	36.6	121.5	1,198.6	631.9	4.6
Locked gate	66.8	--	--	25.3	20.4	21.1	--
No trespassing	480.4	--	4.5	23.5	331.7	120.7	--
No hunting	41.4	--	--	--	36.8	4.6	--
Other posted signs	39.9	--	--	4.2	24.4	11.3	--
Other evidence	326.8	--	--	4.8	127.2	194.8	--
Total	2,950.9	2.4	41.1	179.3	1,739.1	984.4	4.6
Southwest							
Not posted	1,308.9	--	2.8	10.8	329.2	960.0	6.1
Locked gate	54.6	--	--	2.6	16.0	36.0	--
No trespassing	160.1	--	--	8.3	71.6	80.2	--
No hunting	8.7	--	2.8	--	5.9	--	--
Other posted signs	11.2	--	--	--	11.2	--	--
Other evidence	376.5	--	--	11.5	94.2	270.8	--
Total	1,920.0	--	5.6	33.2	528.1	1,347.0	6.1
Southeast							
Not posted	573.3	3.0	13.0	80.6	236.1	230.0	10.6
Locked gate	2.2	--	--	--	--	2.2	--
No trespassing	126.6	--	--	--	52.9	66.2	7.5
No hunting	5.4	--	--	--	2.7	2.7	--
Other posted signs	18.7	--	--	2.5	2.7	13.5	--
Other evidence	183.0	--	--	--	40.7	139.1	3.2
Total	909.2	3.0	13.0	83.1	335.1	453.7	21.3
All Units							
Not posted	11,584.3	14.5	392.2	1,774.9	6,358.2	2,993.5	51.0
Locked gate	320.3	--	4.5	82.1	163.5	68.5	1.7
No trespassing	1,371.1	1.8	24.8	124.6	779.6	431.1	9.2
No hunting	99.8	--	2.8	3.6	71.0	22.4	--
Other posted signs	145.3	--	4.1	21.0	82.5	37.7	--
Other evidence	1,238.6	--	5.5	26.6	394.2	809.1	3.2
Total	14,759.4	16.3	433.9	2,032.8	7,849.0	4,362.3	65.1

Table 27.--Area of noncommercial forest land by ownership class, Wisconsin, 1983

(In thousand acres)

Ownership class	All areas	Unproductive areas	Productive-reserved areas
National Forest	147.4	94.9	52.5[1/]
Miscellaneous federal	54.9	2.3	52.6
State	137.8	31.9	105.9
County and municipal	60.4	44.9	15.5
Indian	3.8	2.2	1.6
Forest industry	17.5	17.5	--
Farmer	59.8	52.5	7.3
Misc. private-corp.	14.2	5.4	8.8
Misc. private-indiv.	96.1	79.4	16.7
Total	591.9	331.0	260.9

[1/] Includes 33.8 thousand acres of productive-deferred areas.

Table 28.--Area of noncommercial forest land by forest type, Wisconsin, 1983

(In thousand acres)

Forest type	All areas	Unproductive areas	Productive-reserved areas[1/]
Jack pine	4.6	2.0	2.6
Red pine	17.1	--	17.1
White pine	2.7	--	2.7
Balsam fir	14.9	14.0	.9
White spruce	1.8	--	1.8
Black spruce	190.5	183.6	6.9
Northern white-cedar	20.7	17.2	3.5
Tamarack	20.5	20.5	--
Oak-hickory	56.6	26.5	30.1
Elm-ash-soft maple	98.6	45.1	53.5
Maple-birch	60.9	2.5	58.4
Aspen	77.7	5.7	72.0
Paper birch	4.2	2.3	1.9
Exotic	9.5	--	9.5
Nonstocked	11.6	11.6	--
All types	591.9	331.0	260.9

[1/] Includes 33.8 thousand acres of productive-deferred areas.

Table 29.--Area of nonforest land with trees by forest type and land use, Wisconsin 1983

(In thousand acres)

Forest type	All uses	Land use							
		Cropland	Improved pasture	Wooded strips	Idle farmland	Marsh	Wind-breaks	Urban and other[1/]	Wooded pasture
Jack pine	14.2	--	4.7	--	4.4	5.1	--	--	--
Red pine	8.5	--	1.3	2.3	--	--	4.9	--	--
White pine	10.3	--	2.3	2.2	--	5.8	--	--	--
Balsam fir	7.3	--	--	--	--	7.3	--	--	--
White spruce	2.0	--	--	--	2.0	--	--	--	--
Black spruce	9.5	--	--	1.8	--	7.7	--	--	--
Northern white-cedar	1.2	--	1.2	--	--	--	--	--	--
Tamarack	30.6	--	--	--	4.2	26.4	--	--	--
Oak-hickory	213.9	16.4	103.2	12.4	21.0	8.4	15.7	--	36.8
Elm-ash-soft maple	269.1	9.2	67.7	9.4	21.7	140.8	4.2	--	16.1
Maple-birch	200.9	16.5	80.7	8.8	21.7	11.5	11.6	--	50.1
Aspen	165.2	6.9	39.2	8.1	33.4	68.0	4.4	--	5.2
Paper birch	28.6	--	--	--	--	24.7	--	--	3.9
Exotic	2.4	--	--	--	--	2.4	--	--	--
Nonstocked	33.7	5.1	22.0	--	2.1	4.5	--	--	--
Not typed	244.3	--	--	--	--	--	--	244.3	--
All types	1,241.7	54.1	322.3	45.0	110.5	312.6	40.8	244.3	112.1

[1/] Forest type was not recorded on plots classified as urban and other land with trees.

Table 30.--Sampling errors[1/] for estimates of commercial forest area smaller than State totals, Wisconsin, 1983

Sampling error	Commercial forest area
percent	thousand acres
1	744.0
2	186.0
3	82.7
4	46.5
5	29.8
10	7.4
15	3.3
20	1.9
25	1.2
50	0.3
100	0.1

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Pulpwood Production in the North-Central Region by County, 1984

James E. Blyth and W. Brad Smith

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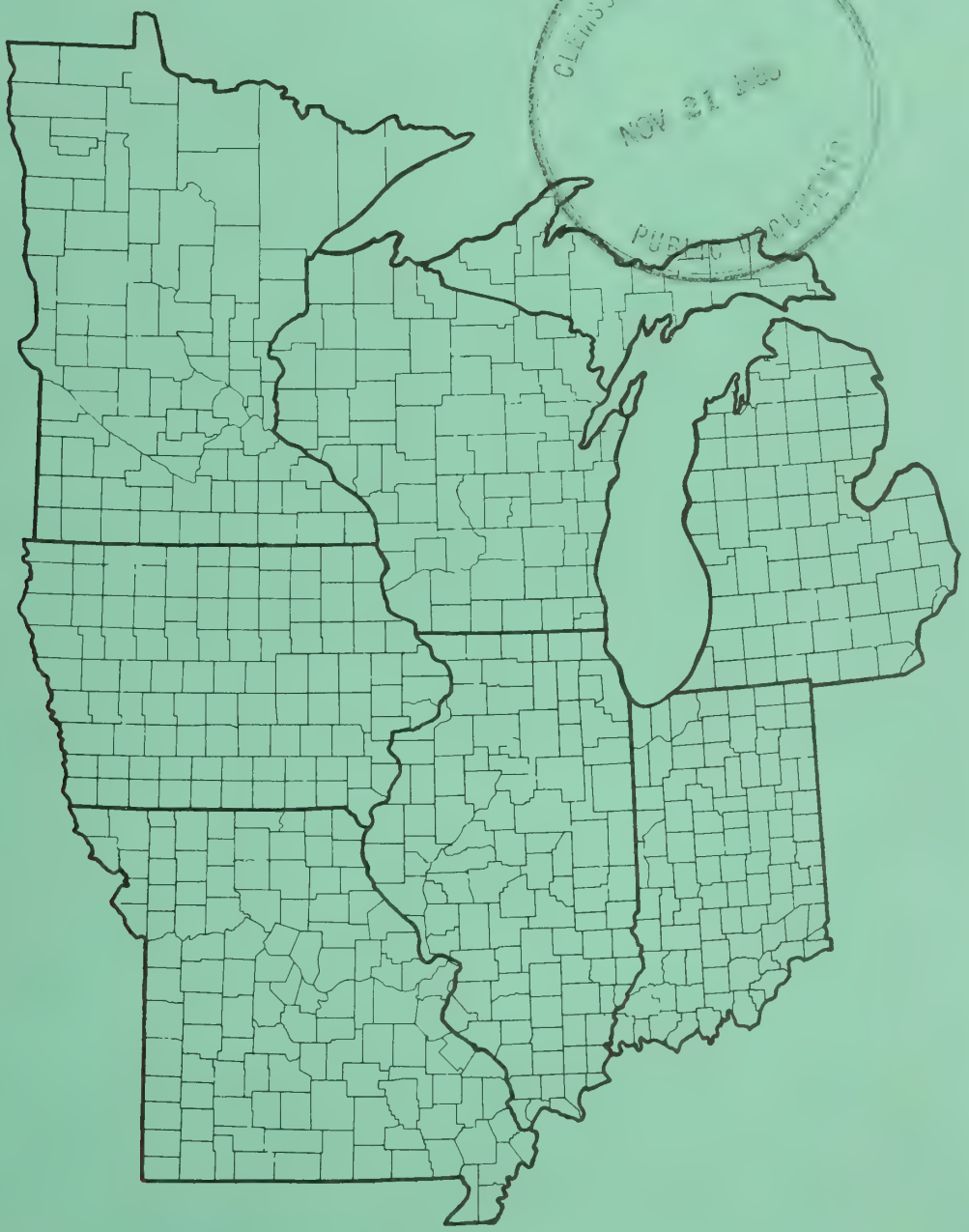

North Central Forest Experiment Station
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St. Paul, Minnesota 55108
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HIGHLIGHTS

Lake States

Pulpwood production rose 10 percent to a record 7.19 million cords in 1984. The aspen cut surpassed the 1983 peak by 251,000 cords. Harvests of hard maple and soft maple reached record levels. Output from softwoods climbed in every species group except hemlock, tamarack, and cedar. Eight percent of the total production was whole-tree chips, compared to 9 percent in 1983; aspen remained the preferred species. Output rose 13 percent for flakeboard plants and 9 percent for pulpmills. Production set records in each State and advanced 13 percent in Minnesota, 11 percent in Michigan, and 7 percent in Wisconsin. Minnesota output exceeded 2 million cords for the first time. Aspen accounted for 74 percent of the roundwood cut in Minnesota.

For the fourth consecutive year, softwood residue imports from Canada dropped and were only 12,000 cords in 1984. Twenty-three percent of Wisconsin's pulpwood requirements came from out-of-State.

Central States

Central States pulpwood production fell 12 percent to 395,000 cords. Production dropped in each State except Iowa. About 7 out of 10 cords were residue from wood-using mills. Indiana accounted for 52 percent of the output. Two-thirds of the output was exported to other States.

Pulpwood receipts fell to 135,000 cords from 148,000 cords in 1983. Only 3,000 cords were imported.

Exports to other States declined for the first time in 6 years but are likely to continue to account for 2 out of 3 cords produced.

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PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION BY COUNTY, 1984

James E. Blyth, *Principal Market Analyst, and* **W. Brad Smith**, *Mensurationist*

Pulpwood constitutes more than half the industrial timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri).

Current detailed information about pulpwood production[1] is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Also, scientists need current pulpwood information to plan research projects.

Since 1979, we have included logs, bolts, and wood residue used in manufacturing particleboard, waferboard, and oriented strand board in this annual report. Together, these products are called flakeboards. Wood used at flakeboard plants is identical or nearly identical to wood used at pulpmills.

Because flakeboard plants primarily use aspen and wood residue, including them does not distort roundwood use trends for other species nor preclude comparing survey results with 1978 and previous years.

Pulpmills and flakeboard plants using North Central States timber in 1984 reported their pulpwood receipts[2] by species groups and counties of origin. This report presents the results of the survey, analyzes the data where appropriate, compares results with 1983 or earlier years, and discusses trends in pulpwood production and use.

The Lake States and Central States are discussed separately because the timber types in each area are different and less information can be released about the Central States (more detailed data on pulpwood production and receipts in the Central States would reveal the operations of individual mills). This is the 26th annual report of the pulpwood harvest in Lake States counties and the 25th annual report of the Central States harvest.

Several mills buy their pulpwood in green tons rather than in cords. Conversion factors used in the Lake States to convert green tons of pulpwood to standard cord equivalents are shown in the Appendix. Conversion factors used in the Central States are shown in footnote 1 of table 4.

Pulpwood production in Minnesota is completely and accurately shown. However, to prevent disclosure of confidential information about softwood pulpwood use by individual companies, the total quantity of softwood pulpwood imports and exports between Minnesota and Canada is not reported. *Thus, some Minnesota softwood shipped to Canada is shown as remaining and used in Minnesota, and receipts of Canadian softwood in Minnesota are understated.*

LAKE STATES

Production

Pulpwood production rose from 6.54 million cords[3] in 1983 to a record 7.19 million cords in 1984, an increase of 10 percent (table 1). Of each 100 cords produced, 92 cords were roundwood (including chips from roundwood); the remainder was residue from wood-using plants.[4]

---

[1]*Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut in a specific county or region, plus the annual wood residue volume produced by sawmills, veneer mills, etc., in a specific State or region that was used for pulp, particleboard, waferboard, or oriented strand board.*

[2]*Pulpwood receipts are the volume of wood received by mills in a specific State or region, regardless of the geographic source.*

[3]*All references to cords are in standard cords. A standard cord is 128 cubic feet of wood, bark, and air space.*

[4]*Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using plants that is used for pulping and flakeboard. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from slabs, edgings, and veneer cores.*

Table 1.--Production and imports of pulpwood, Lake States, 1984

(In standard cords, unpeeled)

Species and destination	Production by States[1]				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S.[2]	Canada	Total imports	
Cedar								
Michigan	14,073	--	137	14,210	--	--	--	14,210
Total	14,073	--	137	14,210	--	--	--	14,210
Balsam fir								
Michigan	45,679	--	603	46,282	--	--	--	46,282
Minnesota	--	125,539	471	126,010	--	49	49	126,059
Wisconsin	24,875	3,041	79,614	107,530	--	--	--	107,530
Exported [3]	7,877	17,168	--	25,045	--	--	--	--
Total	78,431	145,748	80,688	304,867	--	49	49	279,871
Hemlock								
Michigan	43,576	--	2,014	45,590	--	--	--	45,590
Wisconsin	3,293	--	23,119	26,412	--	--	--	26,412
Total	46,869	--	25,133	72,002	--	--	--	72,002
Jack pine								
Michigan	142,923	--	308	143,231	--	--	--	143,231
Minnesota	--	105,544	12,750	118,294	--	--	--	118,294
Wisconsin	46,381	11,950	216,660	274,991	2,949[4]	--	2,949[4]	277,940[5]
Exported [3]	--	15,089	--	15,089	--	--	--	--
Total	189,304	132,583	229,718	551,605	2,949[4]	--	2,949[4]	539,465[5]
Red pine								
Michigan	68,488	--	439	68,927	--	--	--	68,927
Minnesota	--	38,275	8,114	46,389	--	--	--	46,389
Wisconsin	9,638	5,784	213,149	228,571	--	--	--	228,571
Total	78,126	44,059	221,702	343,887	--	--	--	343,887
White pine								
Michigan	21,321	--	207	21,528	--	--	--	21,528
Minnesota	--	11,969	2,361	14,330	--	--	--	14,330
Wisconsin	4,375	22	29,394	33,791	--	--	--	33,791
Total	25,696	11,991	31,962	69,649	--	--	--	69,649
Spruce								
Michigan	36,701	--	434	37,135	--	--	--	37,135
Minnesota	--	80,988	101	81,089	--	1,453	1,453	82,542
Wisconsin	25,833	27,818	41,222	94,873	--	--	--	94,873
Exported [3]	14,205	8,770	--	22,975	--	--	--	--
Total	76,739	117,576	41,757	236,072	--	1,453	1,453	214,550
Tamarack								
Michigan	7,973	--	93	8,066	--	--	--	8,066
Minnesota	--	2,234	--	2,234	--	--	--	2,234
Wisconsin	1,685	9,296	3,762	14,743	--	--	--	14,743
Total	9,658	11,530	3,855	25,043	--	--	--	25,043
Ash								
Michigan	11,672	--	--	11,672	--	--	--	11,672
Wisconsin	5,948	370	47,846	54,164	--	--	--	54,164
Total	17,620	370	47,846	65,836	--	--	--	65,836
Aspen								
Michigan	821,611	--	11,739	833,350	--	--	--	833,350
Minnesota	--	1,380,746	39,982	1,420,728	--	--	--	1,420,728
Wisconsin	140,163	113,816	1,014,811	1,268,790	--	--	--	1,268,790
Exported [3]	--	34,331	--	34,331	--	--	--	--
Total	961,774	1,528,893	1,066,532	3,557,199	--	--	--	3,522,868
Balsam poplar								
Michigan	36,864	--	--	36,864	--	--	--	36,864
Minnesota	--	60,577	1,479	62,056	--	--	--	62,056
Wisconsin	781	--	974	1,755	--	--	--	1,755
Exported [3]	--	385	--	385	--	--	--	--
Total	37,645	60,962	2,453	101,060	--	--	--	100,675
Basswood								
Michigan	25,161	--	--	25,161	--	--	--	25,161
Wisconsin	1,020	--	13,624	14,644	--	--	--	14,644
Total	26,181	--	13,624	39,805	--	--	--	39,805
Beech								
Michigan	20,944	--	--	20,944	--	--	--	20,944
Wisconsin	2,475	--	2,014	4,489	--	--	--	4,489
Total	23,419	--	2,014	25,433	--	--	--	25,433
White birch								
Michigan	71,626	--	5,067	76,693	--	--	--	76,693
Wisconsin	7,722	3,488	181,582	192,792	--	--	--	192,792
Total	79,348	3,488	186,649	269,485	--	--	--	269,485

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by States[1]				Imports			
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S.[2]	Canada	Total imports	Total receipts
Yellow birch								
Michigan	25,660	--	--	25,660	--	--	--	25,660
Wisconsin	14,483	--	21,154	35,637	--	--	--	35,637
Total	40,143	--	21,154	61,297	--	--	--	61,297
Cottonwood								
Michigan	1,107	--	--	1,107	--	--	--	1,107
Total	1,107	--	--	1,107	--	--	--	1,107
Elm								
Michigan	20,256	--	--	20,256	--	--	--	20,256
Wisconsin	30,662	215	53,630	84,507	--	--	--	84,507
Total	50,918	215	53,630	104,763	--	--	--	104,763
Hickory								
Michigan	716	--	--	716	--	--	--	716
Wisconsin	--	--	99	99	--	--	--	99
Total	716	--	99	815	--	--	--	815
Hard maple								
Michigan	96,957	--	--	96,957	--	--	--	96,957
Wisconsin	47,796	390	151,412	199,598	--	--	--	199,598
Total	144,753	390	151,412	296,555	--	--	--	296,555
Soft maple								
Michigan	119,488	--	--	119,488	--	--	--	119,488
Wisconsin	18,683	143	109,059	127,885	--	--	--	127,885
Total	138,171	143	109,059	247,373	--	--	--	247,373
Red oak								
Michigan	124,969	--	--	124,969	--	--	--	124,969
Wisconsin	1,140	--	40,306	41,446	--	--	--	41,446
Total	126,109	--	40,306	166,415	--	--	--	166,415
White oak								
Michigan	29,625	--	--	29,625	--	--	--	29,625
Wisconsin	87	--	11,826	11,913	--	--	--	11,913
Total	29,712	--	11,826	41,538	--	--	--	41,538
Other hardwoods								
Michigan	6,191	--	--	6,191	--	--	--	6,191
Wisconsin	4,951	--	6,795	11,746	--	--	--	11,746
Total	11,142	--	6,795	17,937	--	--	--	17,937
Total roundwood								
Michigan	1,793,581	--	21,041	1,814,622	--	--	--	1,814,622
Minnesota	--	1,805,872	65,258	1,871,130	--	1,502	1,502	1,872,632
Wisconsin	391,991	176,333	2,262,052	2,830,376	2,949	--	2,949	2,833,325
Exported [3]	22,082	75,743	--	97,825	--	--	--	--
Total	2,207,654	2,057,948	2,348,351	6,613,953	2,949	1,502	4,451	6,520,579
Residue, softwoods								
Michigan	10,395	--	137	10,532	--	3,264	3,264	13,796
Minnesota	--	38,284	--	38,284	--	1,379	1,379	39,663
Wisconsin	12,480	7,086	47,221	66,787	129,961	6,909	136,870	[illegible]
Exported [3]	--	1,498	--	1,498	--	--	--	--
Total	22,875	46,868	47,358	117,101	129,961	11,552	141,513	257,116
Residue, hardwoods								
Michigan	129,639	--	24,003	153,642	17,493	28	17,521	171,163
Minnesota	--	44,242	--	44,242	--	4,669	4,669	48,911
Wisconsin	37,625	68	224,479	262,172	1,466	330	1,796	263,968
Exported [3]	--	1,154	--	1,154	--	--	--	--
Total	167,264	45,464	248,482	461,210	18,959	5,027	23,986	484,042
All wood material								
Michigan	1,933,615	--	45,181	1,978,796	17,493	3,292	20,785	1,999,581
Minnesota	--	1,888,398	65,258	1,953,656	--	7,550	7,550	1,961,206
Wisconsin	442,096	183,487	2,533,752	3,159,335	134,376	7,239	141,615	3,300,950
Exported [3]	22,082	78,395	--	100,477	--	--	--	--
Total	2,397,793	2,150,280	2,644,191	7,192,264	151,869	18,081	169,950	7,261,737

[1] Vertical columns of figures under the box heading "Production by States", present the amount of pulpwood cut in each State.

[2] Mostly western States.

[3] Pulpwood shipped to mills outside of region.

[4] Ponderosa pine.

[5] Includes ponderosa pine from other U.S.

Principal species cut were aspen (3,557,000 cords), jack pine (552,000 cords), red pine (344,000 cords), balsam fir (305,000 cords), and hard maple (297,000 cords). Other important species, each contributing more than 200,000 cords, were white birch, soft maple, and spruce.

Hardwood pulpwood production eclipsed the previous high in 1983 by 477,000 cords. Hardwood roundwood output rose 418,000 cords above the 1983 round hardwood record, while output from hardwood mill residue surpassed the 1981 record for hardwood residue by 4,000 cords. Harvests of aspen, hard maple, and soft maple climbed to record levels. Aspen exceeded the 1983 peak by 251,000 cords, hard maple outstripped the 1980 high by 19,000 cords, and soft maple beat the 1979 high by 17,000 cords.

Softwood production rose 173,000 cords from 1983, although production from mill residue dropped 7,000 cords. Output increased in each softwood species except for hemlock and two minor components (tamarack and cedar). Significant gains were in jack pine (102,000 cords), red pine (42,000 cords), and spruce (36,000 cords). White pine reached a record harvest for the fifth consecutive year.

Lake States loggers produced 548,000 cords of whole-tree chips[5] (WTC), down 9 percent from 1983. Eight out of every 100 cords of Lake States pulpwood output were WTC. Seventeen out of 100 cords cut in Michigan were WTC. WTC production was off in each State; production in Wisconsin was nominal. Production of WTC by species group and State was:

State	Softwoods	Aspen	Other hardwoods
	(Thousand cords)		
Michigan	16.3	247.5	144.2
Minnesota	--	111.7	6.9
Wisconsin	--	21.2	--

Michigan.—Michigan producers supplied 2.40 million cords of pulpwood, up 11 percent from the previous peak in 1983. Production of aspen, hard maple, and red oak reached new highs. Marquette, Iron, Delta, Menominee, and Schoolcraft Counties were the top producers.

Minnesota.—For the first time, Minnesota production exceeded 2 million cords. Pulpwood production rose to 2.15 million cords, a gain of 13 percent from 1983. Aspen output, rising above 1.5 million cords for the first time, accounted for 74 percent of all roundwood cut. Demand for softwoods except tamarack strengthened. Balsam fir output was above any year since 1957. Seven counties—St. Louis, Itasca, Koochiching, Beltrami, Cass, Hubbard, and Lake—furnished four-fifths of the roundwood.

Wisconsin.—Wisconsin's output of 2.64 million cords was 7 percent above the record high in 1983. Aspen, birch, soft maple, and red pine production reached peak levels. On the other hand, hemlock production fell to the lowest level in at least 39 years. Bayfield, Marinette, Oneida, Forest, Sawyer, Langlade, Douglas, Price, and Vilas Counties each produced more than 100,000 cords.

In this report, we show the distribution of the harvest in two ways: first, the amount of pulpwood cut relative to the growing-stock volume in each of five major pulpwood species (fig. 1); and, second, the amount of pulpwood cut relative to commercial forest area (fig. 2). For the major supply areas, pulpwood harvesting was most intensive for jack pine in the Northeastern Wisconsin and Western Upper Peninsula of Michigan Survey Units; for red pine in the Central Unit of Wisconsin; for spruce and balsam fir in Northeastern Wisconsin; and for aspen in Northeastern Wisconsin and the Northern Pine Unit of Minnesota.

More than 200 cords of pulpwood were harvested per thousand acres of stocked commercial forest land in the following counties:

Michigan	Minnesota	Wisconsin
Iron	Clearwater	Bayfield
Dickinson	Beltrami	Burnett
Menominee	Hubbard	Sawyer
Delta	Koochiching	Price
Montmorency	Itasca	Vilas
Alcona		Oneida
Missaukee		Forest
Manistee		Florence
Mason		Marinette
Lake		Lincoln
Osceola		Langlade
Mecosta		Menominee

Receipts

Thirty-eight pulp and nine flakeboard mills received 7.26 million cords of pulpwood in 1984, a gain of more than one-half million cords from 1983. Forty-one of 47 operating mills used aspen and 17 used maple (table 2).

All three States supply many mills with pulpwood, including mills outside the Lake States area. Minnesota and Wisconsin each supplied 27 mills and Michigan supplied 25 mills.

[5]*Pulpwood produced from chipping entire trees (all portions of trees above ground, except the stumps).*

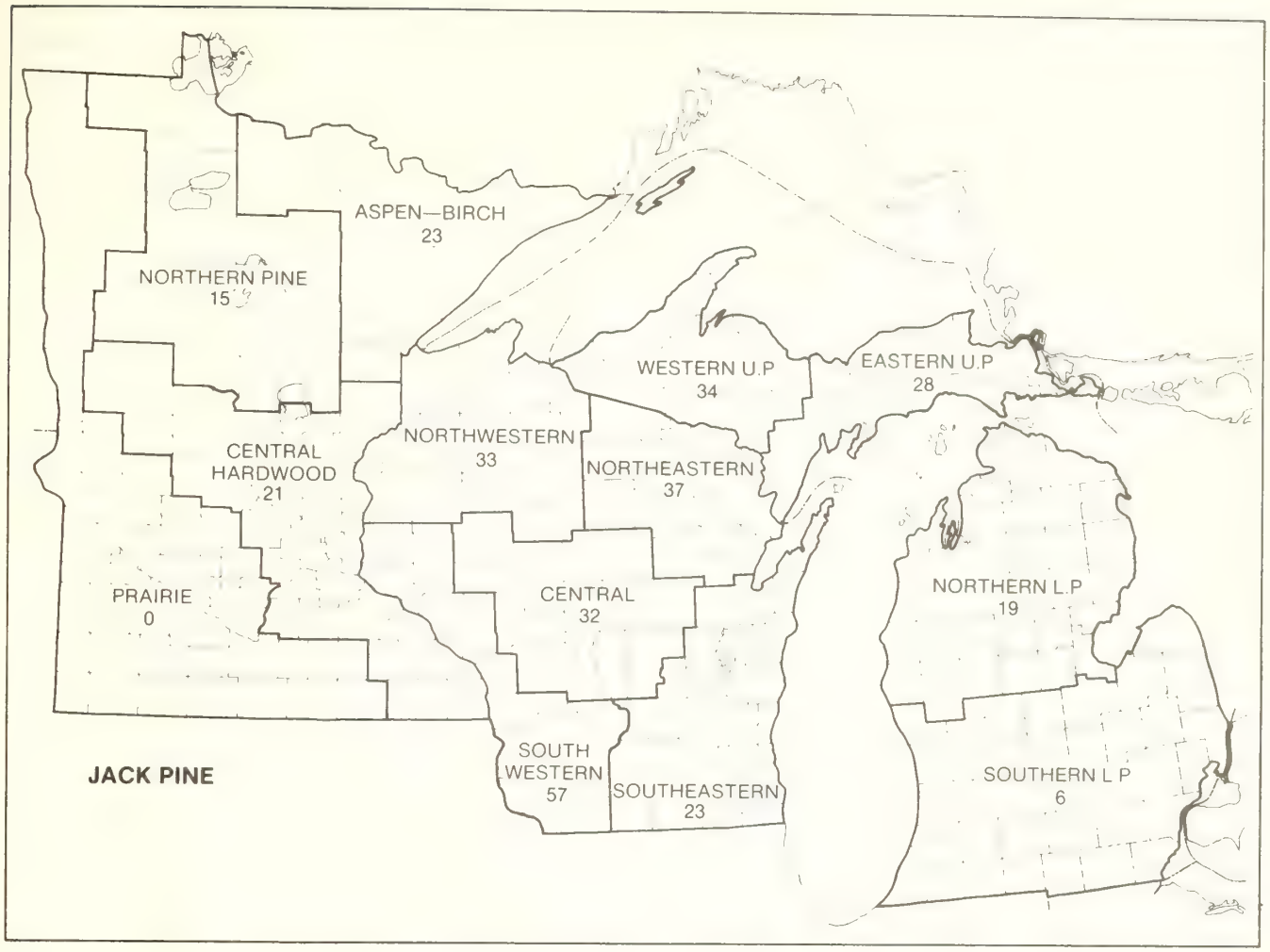


Figure 1.—*Cords of roundwood pulpwood (including chips from roundwood) harvested per 1,000 cords of merchantable volume in five principal pulpwood species by Forest Survey Unit, 1984. Merchantable volume was determined during the last forest inventory in each State.*

Softwood residue imports from Canada plunged for the fourth consecutive year and were only 12,000 cords in 1984, the lowest level since 1972. Shipments of softwood residue from other areas of the U.S. to the Lake States declined slightly, leading to the second lowest demand for these residues since 1967; South Dakota and Wyoming were the major suppliers.

Michigan.—All but 3 percent of the 2.00 million cords of pulpwood received in Michigan came from within the State. Hardwood mill residue was the principal import. Receipts were strong for aspen, jack pine, red oak, and hard maple.

Wisconsin.—Twenty-five Wisconsin mills procured 3.30 million cords of pulpwood and 23 percent was from out-of-State. Michigan supplied 442,000 cords, Minnesota 183,000 cords, other (primarily western) States 134,000 cords, and Canada 7,000 cords. Leading imports were aspen, softwood mill residue, jack pine, and spruce. Aspen, white birch, and soft maple were in record demand.

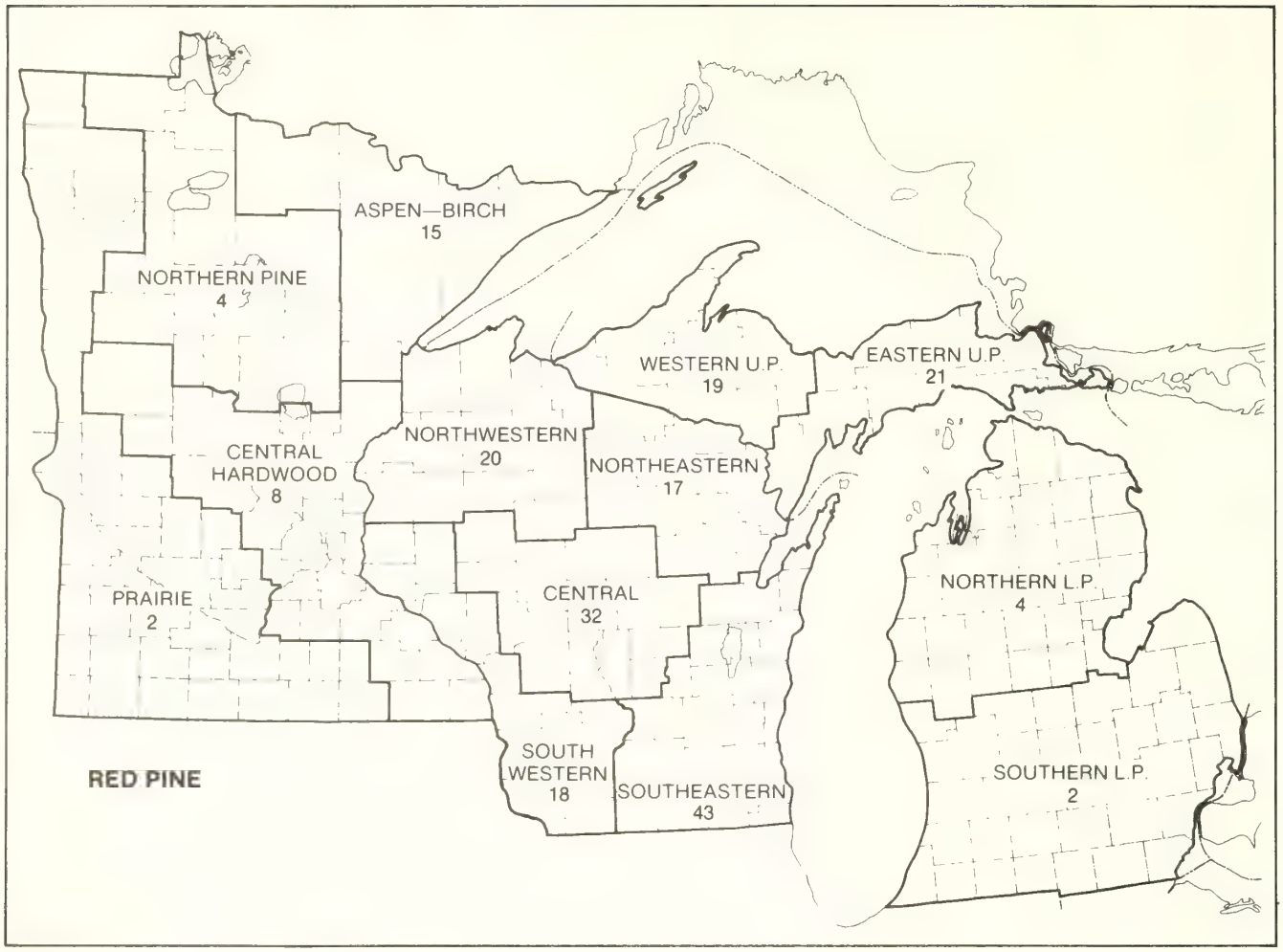
Minnesota.—Minnesota pulpwood receipts are not fully reported (see earlier explanation).

Industry Trends and Analysis

Pulpmills

Average daily pulp production rose 1 percent to 10,885 tons per day in 1984 (table 3). Expanded production was in kraft and groundwood pulp. A large new Michigan mill will probably begin operating in late 1985. Duluth is being considered as a potential pulpmill site by at least two different groups.

(Figure 1 continued)



Lake States pulpwood production for pulpmills in 1982, 1983, and 1984 was:

Species	Production		
	1982	1983	1984
	(Thousand cords)		
Roundwood			
Aspen	1,828	2,133	2,273
Other species	2,621	2,618	2,899
Residue	384	445	493
Total	4,833	5,196	5,665

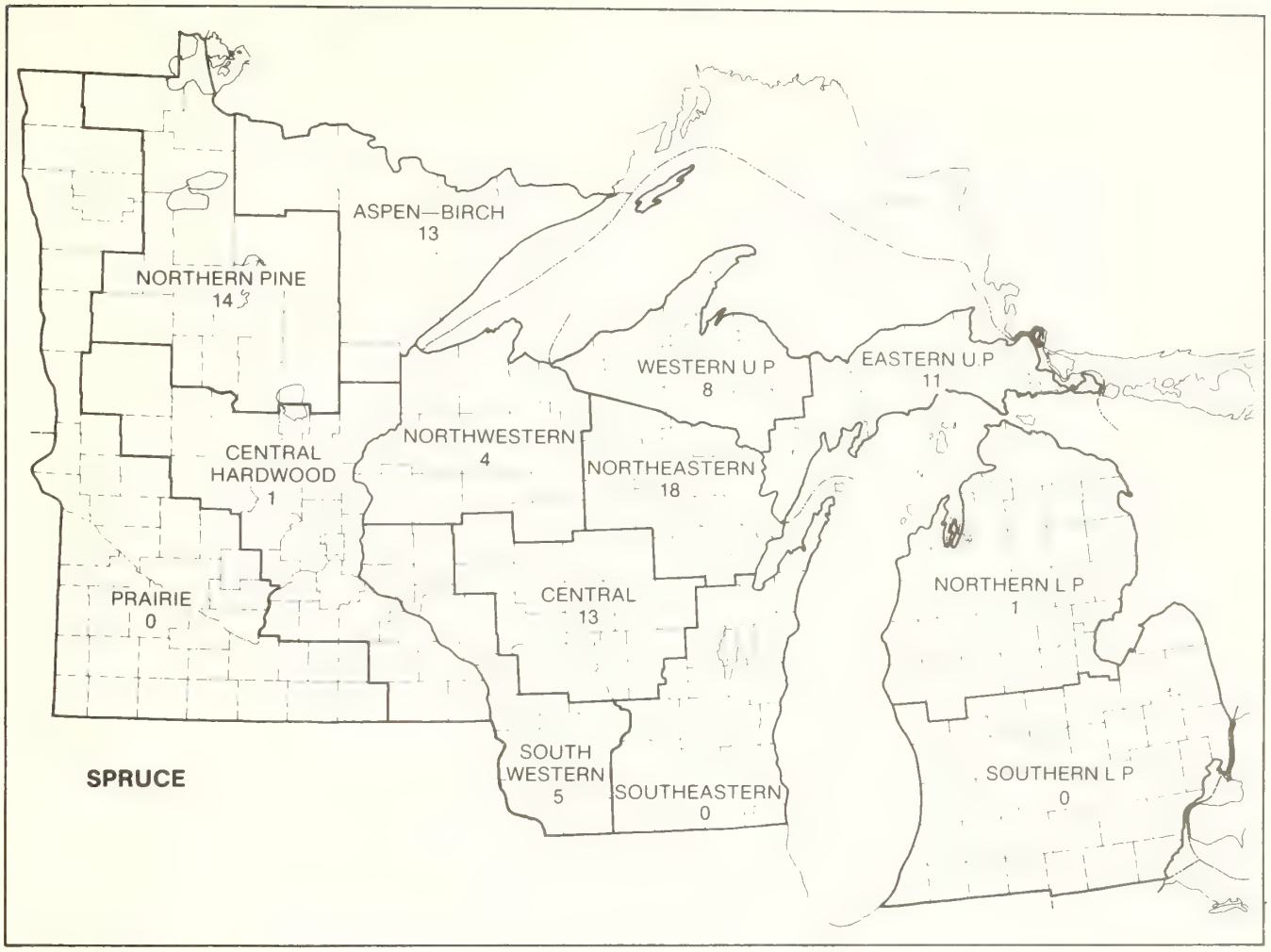
The 9-percent rise in pulpwood production for pulpmills in the Lake States during 1984 compares favorably with the 5.6 percent rise in U.S. paper and paperboard production in 1984.

Flakeboard mills

No new mills began operating in 1984. Annual production capacity of the Lake States flakeboard plants remained at 860 million square feet as shown below:

Company	Location	Capacity (Million square feet 3/4-inch basis)
Champion International Corp.	Gaylord, MI	175
Weyerhaeuser Co.	Grayling, MI	105
Blandin Wood Products Co.	Grand Rapids, MN	135
Northwood Panelboard Co.	Bemidji, MN	80
Potlatch Corp.	Bemidji, MN	75
Potlatch Corp.	Cook, MN	80
Louisiana-Pacific	Hayward, WI	130
Rodman Industries	Marinette, WI	15
Weyerhaeuser Co.	Marshfield, WI	65
		860

(Figure 1 continued)



Lake States pulpwood production for flakeboard plants in 1982, 1983, and 1984 was:

Species	Production		
	1982	1983	1984
	(Thousand cords)		
Roundwood			
Aspen	554	1,173	1,284
Other species	61	93	158
Residue	73	80	85
Total	688	1,346	1,527

Pulpwood production in the Lake States for flakeboard climbed 13 percent from 1983, primarily because housing starts in the U.S. were up 2.4 percent from 1983 to 1.745 million units and the newest mills could operate closer to capacity. During 1984, panel use in housing increased 6 percent.

A new Minnesota waferboard plant and a new Michigan medium density fiberboard plant are scheduled to begin operating in 1985.

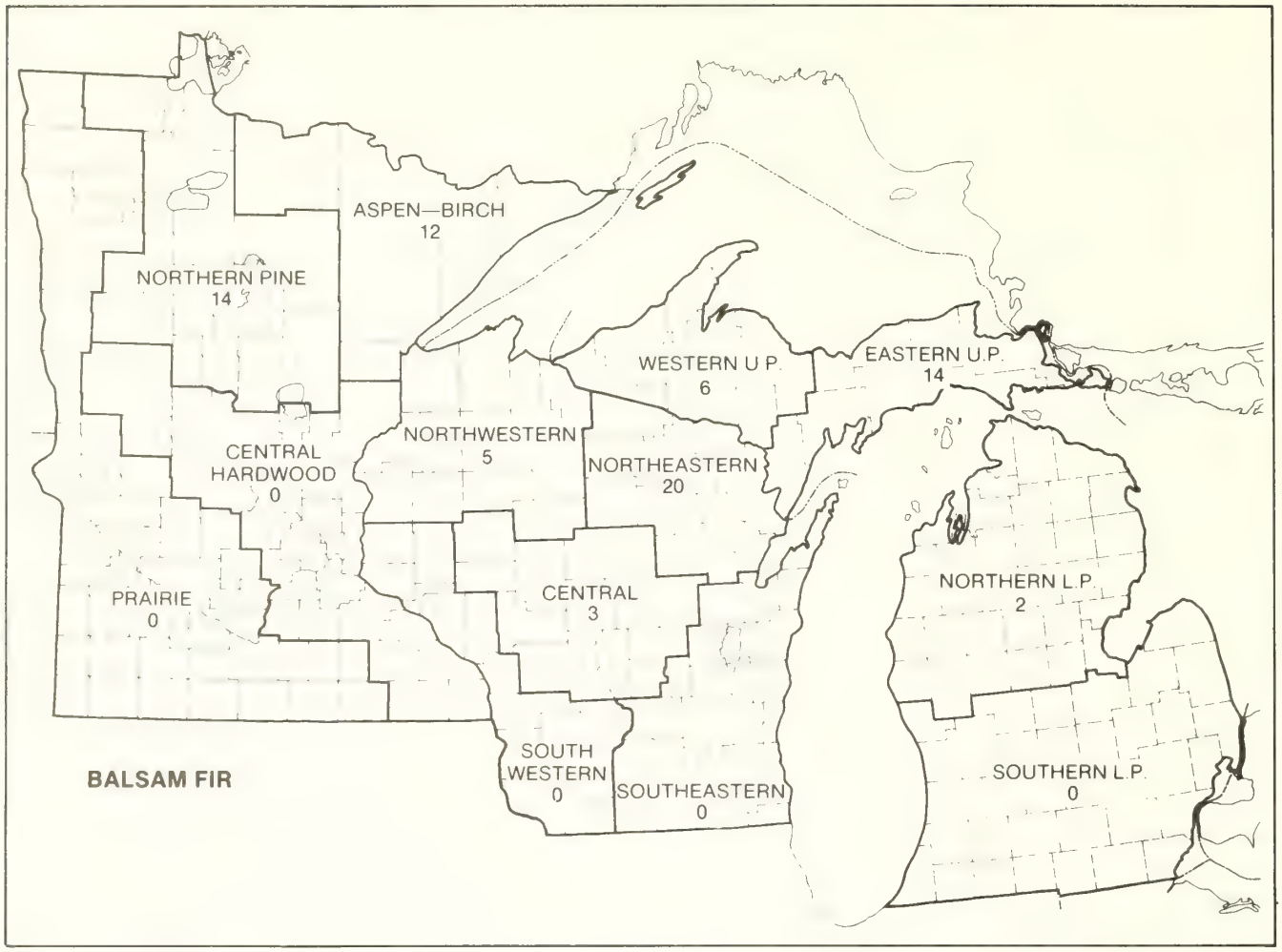
With moderately strong markets for paper and paperboard, good demand for housing in 1985, and new Lake States pulp and flakeboard mills starting up, Lake States pulpwood output is likely to set another record in 1985, although the percentage gain is likely to be smaller than in 1984.

CENTRAL STATES

Production

Pulpwood production dropped 12 percent to 395,000 cords, (table 4), the second lowest output in 15 years. Approximately 7 out of 10 cords were residue from wood-using mills. Demand fell in each roundwood species group and in each mill residue category. After five consecutive annual increases, exports from the Central States (mainly hardwood residue) declined 14 percent. Kentucky, Michigan,

(Figure 1 continued)



Ohio, Wisconsin, and Oklahoma mills received two-thirds of the pulpwood produced.

Indiana, accounting for slightly more than one-half the output, produced 9 percent less pulpwood than in 1983. Output fell in Illinois and Missouri but increased in Iowa.

Loggers harvested pulpwood in 20 Illinois counties, 17 Indiana counties, 16 Missouri counties, and 12 Iowa counties (fig. 3). Producing areas contracted in southern Illinois and southeastern Missouri and expanded in east central Iowa.

Receipts

Three Central States pulpmills received 135,000 cords in 1984, down 9 percent from 1983. Both receipts of residue from wood-using mills and roundwood declined. Imports were only 3,000 cords.

Industry Trends and Analysis

Average daily pulp production remained at 470 tons (table 5). No changes in average daily production are anticipated.

Although exports to other States declined for the first time in 6 years, exports are expected to remain strong and mills in adjacent States are likely to provide markets for at least 2 out of 3 cords of Central States pulpwood.

If no more Central States mills close, pulpwood production will probably remain in the range of 370,000 to 450,000 cords during the next 3 years.

(Figure 1 continued)

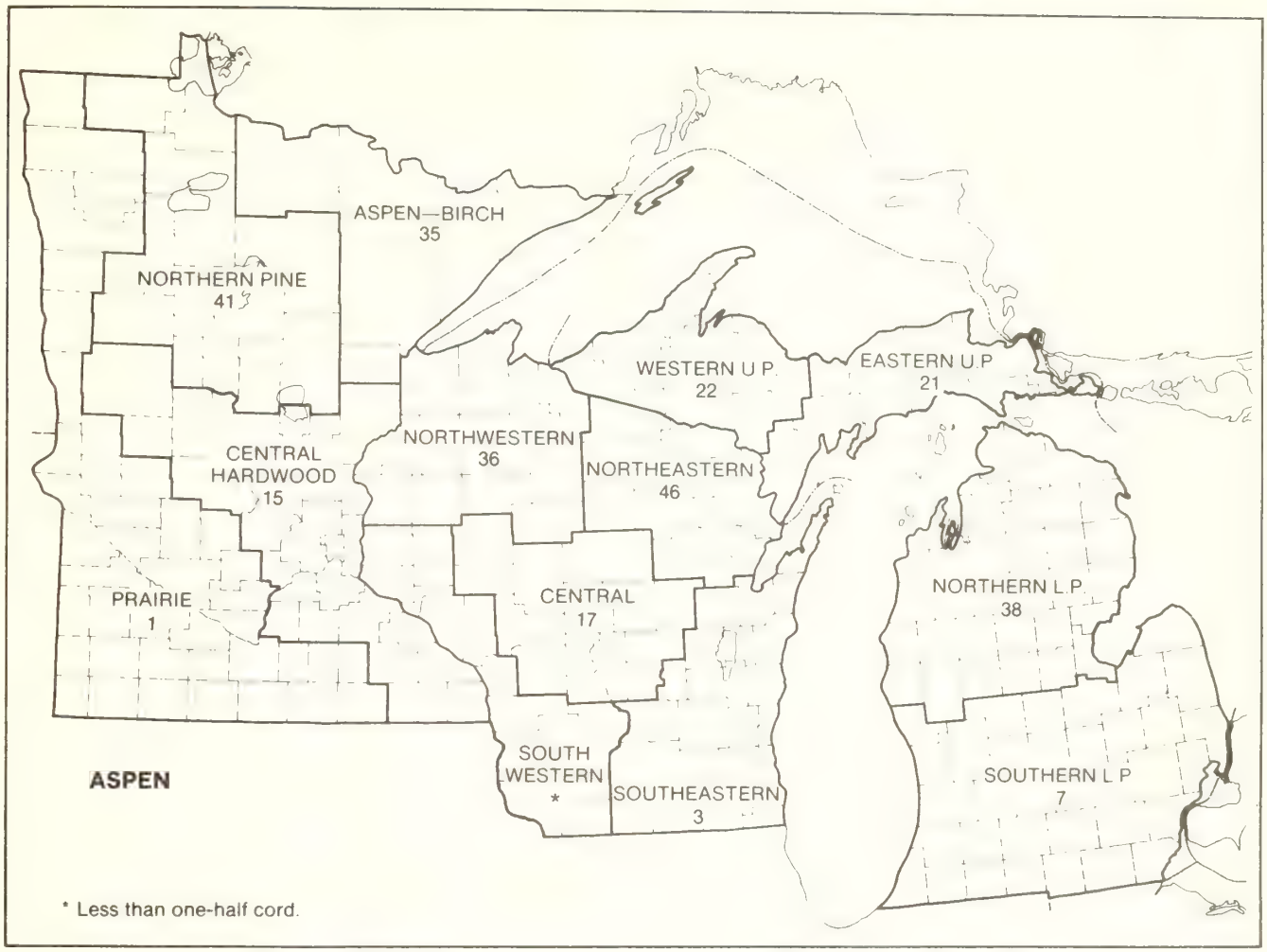


Table 2.--Numbers of industrial plants in the Lake States using a particular species or residue for pulping and flakeboard in 1984

Species and kind of material	Total Lake States	State		
		Michigan	Minnesota	Wisconsin
Aspen	41	8	13	20
Balsam fir	15	3	4	8
Birch	16	5	--	11
Hemlock	5	1	--	4
Pine	11	5	2	4
Spruce	16	3	5	8
Tamarack	7	1	2	4
Maple	17	7	--	10
Oak	14	7	--	7
Other hardwoods	19	7	4	8
Softwood residue	13	3	2	8
Hardwood residue	18	7	2	9
Total plants[1/]	47	9	13	25

[1/] Some plants use more than one species, so numbers in columns are not additive.

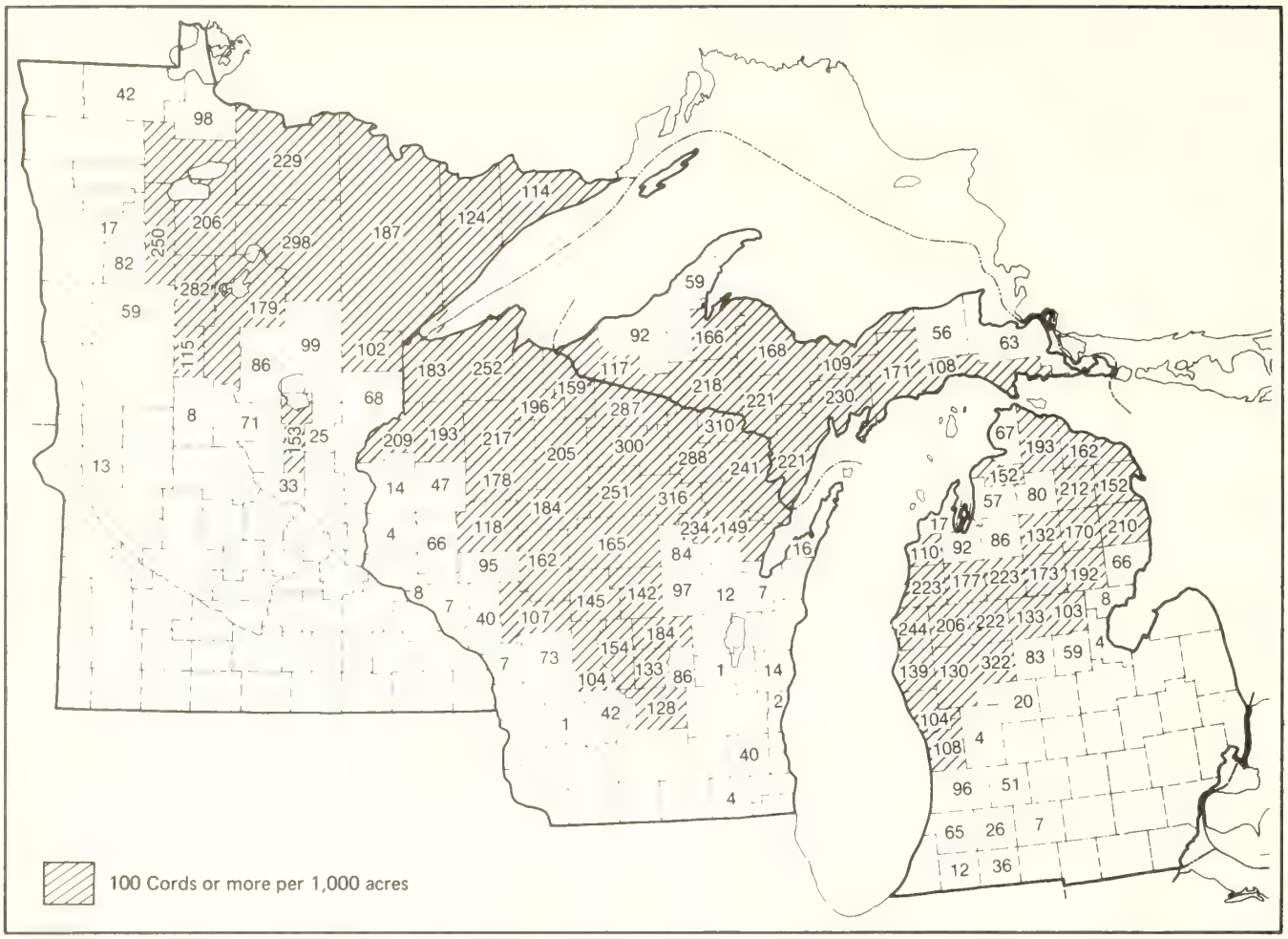


Figure 2.—*Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1984. Acres of stocked commercial forest land were determined during the last forest inventory in each State.*

Table 3.--Average daily production of active woodpulp mills in the Lake States by mill, location, and type of pulp produced, 1984

(In tons per 24 hours)[1/]

Company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Michigan						
Abitibi-Price, Inc.	Alpena	430	--	--	430	--
Champion International	Ontonagon	440	--	--	--	440
Manistique Pulp and Paper Co.	Manistique	90	--	--	90	--
Mead Corp.	Escanaba	800	--	600	200	--
Menasha Corp.	Otsego	225	--	--	--	225
Packaging Corp. of America	Filer City	600	--	--	--	600
Warren Co., S.D.	Muskegon	250	--	250	--	--
Total	7 mills	2,835	--	850	720	1,265
Minnesota						
Blandin Paper Co.	Grand Rapids	300	--	--	300	--
Hennepin Paper Co.	Little Falls	75	--	--	75	--
Boise Cascade Corp.	International Falls	920	--	380	540	--
Potlatch Corp.	Cloquet	475	--	475	--	--
Superwood Corp.	Bemidji	100	--	--	100	--
Champion International	Sartell	385	--	--	385	--
Superwood Corp.	Duluth	350	--	--	350	--
Conwed Corp.	Cloquet	50	--	--	50	--
Certain-Teed Corp.	Shakopee	80	--	--	80	--
Total	9 mills	2,735	--	855	1,880	--
Wisconsin						
James River Corp.	Green Bay	150	150	--	--	--
Weyerhaeuser Co.	Rothschild	200	200	--	--	--
Badger Paper Mills	Peshtigo	100	100	--	--	--
Appleton Papers, Inc.	Combined Locks	200	--	--	200	--
Consolidated Papers, Inc.	Stevens Point	310	--	--	310	--
Consolidated Papers, Inc.	Wisconsin Rapids	815	--	515	300	--
Green Bay Packaging, Inc.	Green Bay	200	--	--	--	200
Flambeau Paper Co.	Park Falls	110	110	--	--	--
Midtec Paper Corp.	Kimberly	180	--	--	180	--
Pentair, Inc.	Niagara	210	--	--	210	--
Mosinee Paper Mills Co.	Mosinee	220	--	220	--	--
Nekoosa Papers, Inc.	Nekoosa	335	--	335	--	--
Nekoosa Papers, INC.	Port Edwards	235	235	--	--	--
Owens-Illinois	Tomahawk	1,000	--	--	--	1,000
Procter and Gamble, Inc.	Green Bay	[2/]	[2/]	[2/]	[2/]	[2/]
Rhinelander Paper Co.	Rhinelander	75	75	--	--	--
Genstar Corp.	Cornell	100	--	--	100	--
Superior Fiber Products Co.	Superior	140	--	--	140	--
Thilmany Pulp and Paper Co.	Kaukauna	400	--	400	--	--
Tomahawk Pulp Co., Inc.	Tomahawk	50	--	--	50	--
Wausau Paper Mills Co.	Brokaw	185	185	--	--	--
Superwood Corp.	Phillips	100	--	--	100	--
Total	22 mills	5,315	1,055	1,470	1,590	1,200
All States	38 mills	10,885	1,055	3,175	4,190	2,465

[1/] Lockwood's Directory of the Paper and Allied Industries -- 1985.

[2/] Capacity not available.

Table 4.--Production and imports of pulpwood, Central States, 1984

(In standard cords, unpeeled)[1/]

Species and destination	Production by States[2/]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Regional total	Lake states	Other U.S.	Total imports	
Softwoods									
Exported [4/]	16,871	--	--	1,164	18,035	--	--	--	--
Total	16,871	--	--	1,164	18,035	--	--	--	--
Soft hardwoods									
Central States [3/]	5,514	13,207	7,748	7,365	33,834	--	1,402	1,402	35,236
Exported [4/]	5,726	1,705	--	1,741	9,172	--	--	--	--
Total	11,240	14,912	7,748	9,106	43,006	--	1,402	1,402	35,236
Hard hardwoods									
Central States [3/]	3,566	12,976	2,389	9,304	28,235	--	1,377	1,377	29,612
Exported [4/]	9,196	7,444	--	8,224	24,864	--	--	--	--
Total	12,762	20,420	2,389	17,528	53,099	--	1,377	1,377	29,612
Total roundwood									
Central States [3/]	9,080	26,183	10,137	16,669	62,069	--	2,779	2,779	64,848
Exported [4/]	31,793	9,149	--	11,129	52,071	--	--	--	--
Total	40,873	35,332	10,137	27,798	114,140	--	2,779	2,779	64,848
Residue, softwood									
Exported [4/]	1,803	--	5,873	1,892	9,568	--	--	--	--
Total	1,803	--	5,873	1,892	9,568	--	--	--	--
Residue, hardwoods									
Central States [3/]	20,380	30,115	3,994	15,507	69,996	--	--	--	69,996
Exported [4/]	19,272	140,453	--	41,118	200,843	--	--	--	--
Total	39,652	170,568	3,994	56,625	270,839	--	--	--	69,996
All wood material									
Central States [3/]	29,460	56,298	14,131	32,176	132,065	--	2,779	2,779	134,844
Exported [4/]	52,868	149,602	5,873	54,139	262,482	--	--	--	--
Total	82,328	205,900	20,004	86,315	394,547	--	2,779	2,779	134,844

[1/] Factors used in converting to standard green cords (128 cu.ft. including bark and air space) were:
4,266 pounds of softwood roundwood;
4,795 pounds of soft hardwood roundwood;
5,394 pounds of hard hardwood roundwood;
4,100 pounds of softwood chips (green mill residue);
4,400 Pounds of hardwood chips (green mill residue);
2,500 Pounds of chips (all species, dry mill residue).

[2/] Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

[3/] Combined to prevent disclosure of individual mill receipts.

[4/] Pulpwood shipped to mills outside the region.

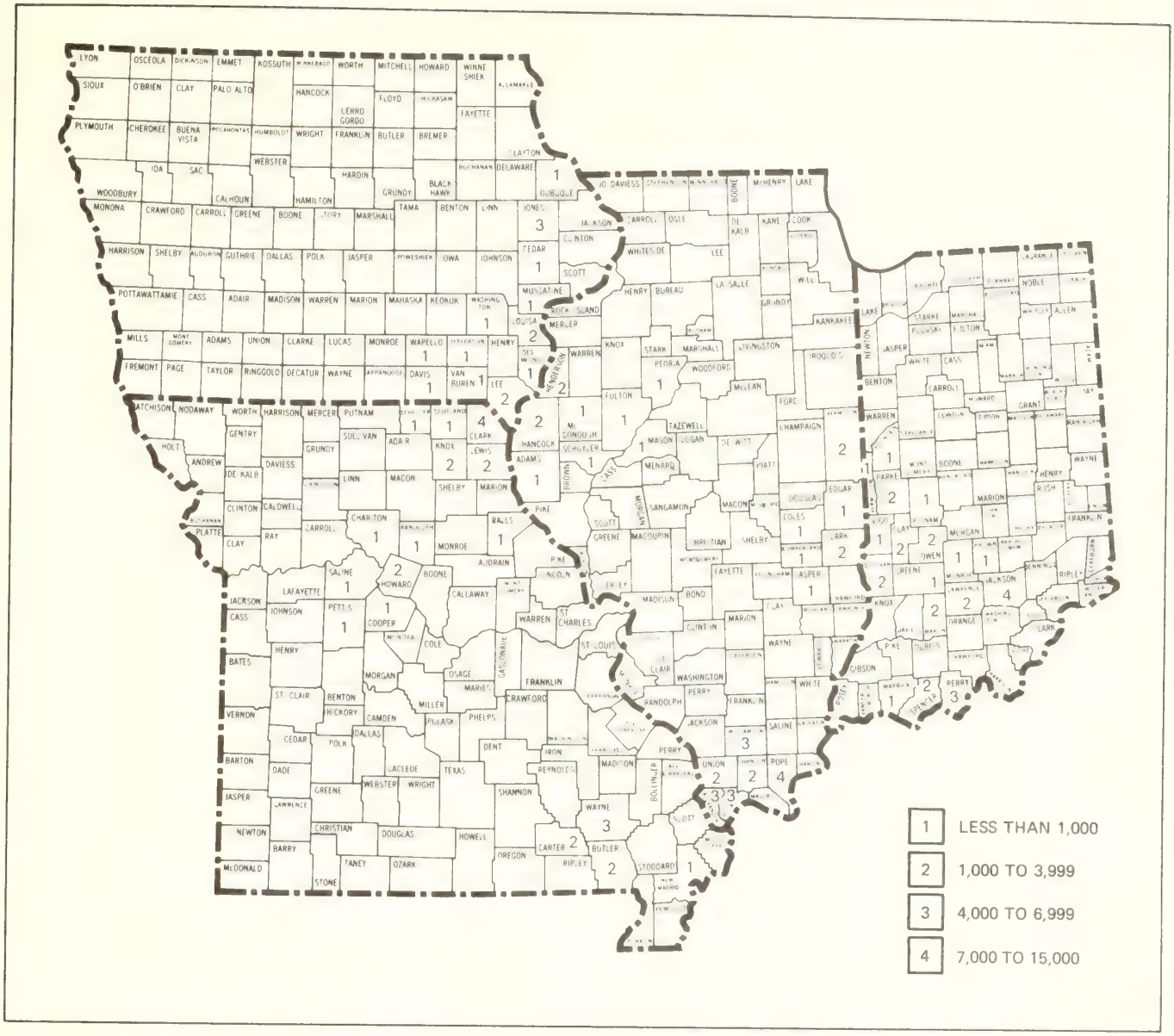


Figure 3.—*Production of pulpwood from roundwood (including chips from roundwood) in the Central States by counties, in standard cords, 1984.*

Table 5.--Average daily production of active woodpulp mills in the Central States by mill, location, and type of pulp produced, 1984

(In tons per 24 hours)[1/]

Company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Illinois						
(No current operations)						
Total	0 mills	--	--	--	--	--
Indiana						
Weston Paper and Mfg. Co.	Terre Haute	270	--	--	--	270
Total	1 mill	270	--	--	--	270
Iowa						
Consolidated Packaging Corp.	Fort Madison	140	--	--	--	140
Total	1 mill	140	--	--	--	140
Missouri						
Huebert Fibreboard, Inc.	Booneville	60	--	--	60	--
Total	1 mill	60	--	--	60	--
All states	3 mills	470	--	--	60	410

APPENDIX

Conversion Factors Used in Lake States

Standard cords of green roundwood per green ton:

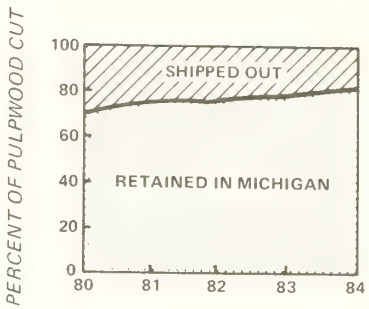
Species	Factor
Cedar	0.6329
Balsam fir	.4688
Hemlock	.4150
Jack pine	.4688
Red pine	.4688
White pine	.4777
Spruce	.5014
Tamarack	.4291
Ash	.4330
Aspen	.4291
Balsam poplar	.4083
Basswood	.5167
Beech	.3956
White birch	.4018
Yellow birch	.3723
Cottonwood	.4291
Elm	.4018
Hickory	.3701
Hard maple	.3617
Soft maple	.4083
Red oak	.3444
White oak	.3723
Other species	.4688

Table 6.--Lake States pulpwood production by State of origin and destination, 1980-1984

(In thousand standard cords, unpeeled)

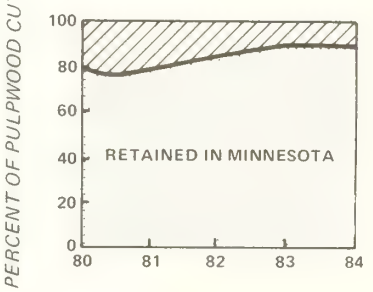
MICHIGAN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1980	1,969	--	490	1,443	36
1981	1,838	--	419	1,402	17
1982	1,751	--	396	1,340	15
1983	2,157	--	391	1,747	19
1984	2,398	--	442	1,934	22
5-year average	2,023	--	428	1,573	22



MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1980	1,333	1,044	216	--	73
1981	1,371	1,119	177	--	75
1982	1,484	1,264	179	--	41
1983	1,910	1,720	155	--	35
1984	2,150	1,888	184	--	78
5-year average	1,650	1,407	182	--	61



WISCONSIN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1980	2,362	18	2,297	35	12
1981	2,389	34	2,320	26	9
1982	2,286	27	2,231	28	--
1983	2,475	53	2,399	23	--
1984	2,644	65	2,534	45	--
5-year average	2,431	39	2,356	32	4

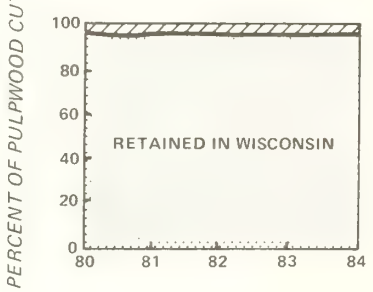


Table 7.--Lake States pulpwood production by Forest Survey Unit and destination by State, 1984

(In hundred standard cords, roughwood basis)

Unit	Total cut	Destination of pulpwood			
		Michigan	Minnesota	Wisconsin	Other
MICHIGAN					
Roundwood					
E. Upper Peninsula	5,103	4,004	--	922	177
W. Upper Peninsula	6,346	3,425	--	2,915	6
N. Lower Peninsula	10,043	9,922	--	83	38
S. Lower Peninsula	585	585	--	--	--
Total	22,077	17,936	--	3,920	221
Residue	1,901	1,400	--	501	--
Total pulpwood	23,978	19,336	--	4,421	221
MINNESOTA					
Roundwood					
Aspen-Birch	9,397	--	7,790	853	754
Northern Pine	10,538	--	9,717	817	4
Central Hardwood	633	--	541	92	--
Prairie	11	--	10	1	--
Total	20,579	--	18,058	1,763	758
Residue	924	--	825	72	27
Total pulpwood	21,503	--	18,883	1,835	785
WISCONSIN					
Roundwood					
Northeastern	9,630	44	--	9,586	--
Northwestern	9,626	167	653	8,806	--
Central	3,776	--	--	3,776	--
Southwestern	276	--	--	276	--
Southeastern	177	--	--	177	--
Total	23,485	211	653	22,621	--
Residue	2,958	241	--	2,717	--
Total pulpwood	26,443	452	653	25,338	--

Table 8.--Lake States annual pulpwood production from roundwood by species, State, and Forest Survey Unit, 1980-1984

(In thousand standard cords, unpeeled)

Unit	All species[1]					Pine					Spruce				
	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984
MICHIGAN															
Eastern Upper Peninsula	469	414	425	500	510	70	56	77	95	113	34	24	33	45	43
Western Upper Peninsula	566	517	554	619	635	53	45	52	52	73	23	19	34	31	33
Northern Lower Peninsula	745	693	585	802	1,004	124	118	118	102	105	1	2	1	1	1
Southern Lower Peninsula	35	48	66	63	59	21	18	15	8	2	--	--	--	--	--
Total	1,815	1,672	1,630	1,984	2,208	268	237	262	257	293	58	45	68	77	77
MINNESOTA															
Aspen-Birch	642	635	618	803	940	66	71	92	68	100	127	93	98	66	90
Northern Pine	552	597	708	942	1,054	76	70	80	67	85	43	34	36	29	27
Central Hardwood	40	36	65	70	63	9	6	7	5	4	(2/)	(2/)	--	(2/)	(2/)
Prairie	3	2	(2/)	1	1	--	(2/)	(2/)	--	(2/)	(2/)	(2/)	--	--	--
Total	1,237	1,270	1,391	1,816	2,058	151	147	179	140	189	170	127	134	95	117
WISCONSIN															
Northeastern	947	880	875	951	963	95	111	156	114	111	27	22	23	21	33
Northwestern	752	870	832	925	962	113	131	141	125	150	5	5	5	7	2
Central	335	315	303	300	377	149	150	166	137	182	1	(2/)	(2/)	(2/)	1
Southwestern	27	24	23	26	28	22	20	23	25	27	(2/)	(2/)	(2/)	(2/)	(2/)
Southeastern	12	9	10	14	18	8	7	8	11	13	(2/)	--	--	(2/)	--
Total	2,073	2,098	2,043	2,216	2,348	387	419	494	412	483	33	27	28	28	36
Total Lake States	5,125	5,040	5,064	6,016	6,614	806	803	935	809	965	261	199	230	200	230

(Table 8 continued on next page)

1/ Includes a small quantity of cedar not shown elsewhere in the table.

2/ Less than 500 cords.

(Table 8 continued)

Unit	Balsam fir					Hemlock					Tamarack				
	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984
MICHIGAN															
Eastern Upper Peninsula	57	57	56	59	44	32	23	30	27	25	3	3	3	4	5
Western Upper Peninsula	46	42	45	36	31	26	16	26	21	22	3	3	7	3	5
Northern Lower Peninsula	6	5	4	6	3	(2/)	(2/)	(2/)	--	--	--	--	--	--	--
Southern Lower Peninsula	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	109	104	105	101	78	58	39	56	48	47	6	6	10	7	10
MINNESOTA															
Aspen-Birch	73	69	68	51	88	--	--	--	--	--	22	11	24	12	6
Northern Pine	38	31	38	39	58	--	--	--	--	--	18	18	20	14	5
Central Hardwood	--	--	(2/)	--	--	--	--	--	--	--	(2/)	(2/)	(2/)	(2/)	(2/)
Prairie	--	--	--	--	--	--	--	--	--	--	3	1	(2/)	(2/)	(2/)
Total	111	100	106	90	146	--	--	--	--	--	43	30	44	26	11
WISCONSIN															
Northeastern	66	79	70	61	60	26	24	29	29	21	2	1	2	2	2
Northwestern	35	25	32	22	20	6	4	4	9	3	1	3	4	3	2
Central	1	1	1	2	1	2	1	(2/)	2	1	(2/)	1	1	1	(2/)
Southwestern	--	(2/)	(2/)	--	--	--	--	--	--	--	--	--	(2/)	--	--
Southeastern	--	--	(2/)	--	--	--	--	--	--	--	--	--	--	--	--
Total	102	105	103	85	81	34	29	33	40	25	3	5	7	6	4
Total Lake States	322	309	314	276	305	92	68	89	88	72	52	41	61	39	25

(Table 8 continued on next page)

2/ Less than 500 cords.

(Table 8 continued)

MICHIGAN

Unit	Aspen					Birch					Other hardwoods				
	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984
Eastern Upper Peninsula	116	89	93	109	117	29	36	31	40	40	124	119	97	106	114
Western Upper Peninsula	209	201	210	242	212	40	44	38	64	54	163	143	135	161	200
Northern Lower Peninsula	374	350	315	523	620	34	25	19	26	26	206	194	128	144	251
Southern Lower Peninsula	6	12	14	15	13	(2/)	(2/)	1	(2/)	(2/)	8	17	36	40	43
Total	705	652	632	889	962	103	105	89	130	120	501	473	396	451	608
MINNESOTA															
Aspen-Birch	313	352	308	563	619	11	9	1	3	2	30	31	27	40	35
Northern Pine	357	422	504	766	853	4	2	2	1	1	16	19	28	26	24
Central Hardwood	29	27	54	62	56	(2/)	(2/)	(2/)	(2/)	(2/)	2	3	4	3	3
Prairie	(2/)	(2/)	--	1	1	--	--	--	--	--	(2/)	--	--	--	--
Total	699	801	866	1,392	1,529	15	11	3	4	3	48	53	59	69	62
WISCONSIN															
Northeastern	459	415	392	451	435	91	74	69	83	90	131	154	134	190	209
Northwestern	326	469	420	481	522	80	73	74	103	105	136	160	152	175	154
Central	85	79	71	91	107	15	12	11	12	13	82	70	53	56	73
Southwestern	1	1	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	4	3	(2/)	(2/)	1
Southeastern	2	1	1	2	2	(2/)	(2/)	(2/)	(2/)	(2/)	2	2	1	1	2
Total	873	965	884	1,025	1,066	186	159	154	198	208	455	389	340	422	439
Total Lake States	2,277	2,418	2,382	3,306	3,557	304	275	246	332	331	1,004	915	795	942	1,109

2/ Less than 500 cords.

Table 9.--Lake States pulpwood production from roundwood by county and species group, 1984

(In standard cords, unpeeled)

MICHIGAN

Unit and county[1/]	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
E. Upper Peninsula												
Alger	52,781	1,277	2,819	2,519	3,089	3,388	2,604	4,040	407	484	6,086	2,237
Chippewa	44,433	541	1,949	1,052	11,104	4,322	894	5,984	344	106	11,509	598
Delta	132,266	2,304	14,709	3,763	12,764	11,532	4,979	10,914	1,309	586	26,987	6,401
Luce	25,917	125	1,863	2,720	5,790	713	317	3,954	193	62	5,798	516
Mackinac	55,796	716	3,322	2,377	2,302	1,652	619	4,594	278	294	21,146	1,884
Menominee	108,281	2,518	15,379	7,185	3,235	3,795	2,647	7,546	1,304	512	36,526	4,366
Schoolcraft	90,813	1,725	4,727	4,859	24,273	10,749	2,553	5,503	1,147	330	8,853	2,958
Total	510,287	9,206	44,768	24,475	62,557	36,151	14,613	42,535	4,982	2,374	116,905	18,960
W. Upper Peninsula												
Baraga	84,560	790	1,303	8,576	6,163	1,409	632	1,195	338	471	32,598	--
Dickinson	82,509	607	6,493	2,802	2,290	1,674	949	6,519	642	241	42,328	2,268
Gogebic	72,287	--	1,333	1,176	2,205	2,601	1,921	2,415	--	2,444	13,730	--
Houghton	29,836	--	702	1,105	3,458	639	23	469	156	441	10,599	--
Iron	142,161	788	8,873	1,684	2,853	2,754	2,301	10,355	876	1,623	56,983	1,736
Keweenaw	93	--	--	65	--	--	--	13	--	--	--	--
Marquette	161,846	2,682	11,600	6,705	27,267	6,223	3,992	11,855	2,625	681	31,835	7,411
Ontonagon	61,233	--	545	281	991	2,187	823	330	39	285	24,071	--
Total	634,525	4,867	30,849	22,394	45,227	17,487	10,641	33,151	4,676	6,186	212,144	11,415
N. Lower Peninsula												
Alcona	63,724	--	95	--	1,643	513	21	17	--	579	46,154	1,788
Alpena	31,798	--	116	--	1,158	--	--	56	--	427	22,531	1,015
Antrim	8,765	--	--	--	34	101	--	--	--	67	6,342	23
Arenac	714	--	--	--	20	--	--	--	--	3	650	31
Bay	64	--	--	--	--	--	--	--	--	--	54	--
Benzie	13,302	--	--	--	37	399	1	--	--	167	6,041	--
Charlevoix	20,637	--	--	--	84	--	--	--	--	367	14,265	68
Cheboygan	70,317	--	537	--	1,854	67	--	160	--	804	50,975	781
Clare	28,756	--	--	--	264	160	7	--	--	16	24,652	52
Crawford	36,065	--	--	--	10,336	1,515	58	--	--	10	16,337	48
Emmet	13,134	--	12	--	57	1,230	--	11	--	150	8,931	64
Gladwin	19,619	--	--	--	1,456	17	--	--	--	63	16,393	263
Grand Traverse	14,021	--	42	--	329	330	5	--	--	104	8,374	--
Iosco	14,892	--	--	--	4,418	894	24	--	--	310	5,977	194
Isabella	6,216	--	--	--	--	--	--	--	--	--	5,504	--
Kalkaska	21,078	--	--	--	4,401	1,354	13	--	--	48	11,801	--
Lake	61,939	--	--	--	3,681	1,615	35	--	--	223	28,147	--
Leelanau	1,273	--	--	--	--	--	--	--	--	--	693	--
Manistee	48,374	--	--	--	888	1,607	36	--	--	735	17,586	--
Mason	35,653	--	--	--	222	222	8	--	--	208	23,107	--
Mecosta	38,604	--	--	--	162	648	5	--	--	35	34,760	--
Midland	8,797	--	--	--	--	--	--	--	--	104	7,029	313
Missaukee	45,407	--	--	--	1,501	1,377	--	--	--	96	36,325	4
Montmorency	61,573	--	--	--	8,027	372	--	--	--	737	37,090	624
Newaygo	40,272	--	--	--	4,924	2,764	62	--	--	89	21,362	--
Oceana	19,967	--	--	--	114	114	4	--	--	70	11,942	--
Ogemaw	41,844	--	11	--	10,510	676	20	--	--	396	18,494	269
Osceola	34,846	--	--	--	155	41	--	--	--	67	25,862	2
Oscoda	52,061	--	33	--	9,570	1,329	46	11	--	337	31,526	510
Otsego	20,852	--	--	--	2,411	1,391	20	--	--	120	13,005	184
Presque Isle	43,132	--	1,802	--	1,406	69	--	743	--	712	27,982	943
Roscommon	42,798	--	166	--	9,188	857	15	55	--	140	24,331	74
Wexford	43,853	--	--	--	1,696	3,852	27	--	--	222	15,466	--
Total	1,004,347	--	2,814	--	80,546	23,514	407	1,053	--	7,406	619,698	7,270
S. Lower Peninsula												
Allegan	13,106	--	--	--	--	--	--	--	--	707	1,171	--
Barry	5,650	--	--	--	72	72	3	--	--	256	977	--
Calhoun	516	--	--	--	45	45	2	--	--	--	16	--
Cass	624	--	--	--	--	--	--	--	--	--	--	--
Eaton	18	--	--	--	--	--	--	--	--	--	18	--
Kalamazoo	1,726	--	--	--	9	9	--	--	--	97	96	--
Kent	474	--	--	--	10	10	--	--	--	1	384	--
Montcalm	2,783	--	--	--	10	10	--	--	--	8	2,212	--
Muskegon	16,479	--	--	--	133	133	4	--	--	127	3,213	--
Ottawa	8,420	--	--	--	685	685	26	--	--	102	4,016	--
St. Joseph	2,071	--	--	--	--	--	--	--	--	--	244	--
Van Buren	6,628	--	--	--	10	10	--	--	--	356	680	--
Total	58,495	--	--	--	974	974	35	--	--	1,654	13,027	--
State total	2,207,654	14,073	78,431	46,869	189,304	78,126	25,696	76,739	9,658	17,620	961,774	37,645

(Table 9 continued on next page)

[1/] Includes only those counties that supplied pulpwood in 1984.

(Table 9 continued)

MICHIGAN

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
E. Upper Peninsula												
Alger	1,251	2,249	3,046	2,379	--	3,351	--	6,834	4,047	145	--	529
Chippewa	326	596	749	505	--	147	--	1,808	1,304	523	--	72
Delta	3,137	3,421	7,923	4,079	--	1,401	--	6,590	8,844	31	7	585
Luce	260	387	851	367	--	317	--	685	919	34	--	46
Mackinac	940	1,644	2,631	1,352	--	279	--	4,955	3,731	885	--	195
Menominee	1,768	2,031	6,285	2,509	--	575	--	5,893	3,394	385	44	384
Schoolcraft	1,872	2,330	4,377	2,728	--	707	--	4,122	6,624	16	5	355
Total	9,554	12,658	25,862	13,919	--	6,777	--	30,887	28,863	2,019	56	2,166
W. Upper Peninsula												
Baraga	733	--	1,749	3,590	--	12,853	--	7,525	3,686	111	--	838
Dickinson	1,993	16	7,193	636	--	530	--	2,044	2,887	145	10	242
Gogebic	1,346	--	301	5,533	--	10,377	--	20,116	4,645	200	--	1,944
Houghton	99	--	719	971	--	2,232	--	5,700	1,529	512	5	477
Iron	1,090	1,448	6,155	5,557	--	10,973	--	16,716	7,887	111	8	1,390
Keweenaw	--	--	--	--	--	--	--	--	--	--	--	15
Marquette	4,167	4,295	11,609	5,310	--	1,196	--	11,712	9,269	618	8	786
Ontonagon	3,424	--	615	3,655	--	3,812	--	10,511	9,072	380	--	212
Total	12,852	5,759	28,341	25,252	--	41,973	--	74,324	38,975	2,077	31	5,904
N. Lower Peninsula												
Alcona	67	103	2,002	--	--	--	--	1,054	2,295	6,640	738	15
Alpena	42	63	1,950	--	--	--	--	201	1,951	2,062	226	--
Antrim	143	98	20	19	--	10	--	1,142	135	592	--	39
Arenac	--	--	--	--	--	--	--	1	9	--	--	--
Bay	--	--	--	--	--	--	--	--	--	--	--	--
Benzie	208	104	355	21	--	52	--	941	3,140	1,616	22	198
Charlevoix	138	141	407	83	--	--	--	2,246	1,612	1,189	--	17
Cheboygan	354	343	3,797	75	--	--	--	5,051	2,844	2,637	38	--
Clare	--	--	336	--	--	--	--	21	446	2,074	728	--
Crawford	48	145	10	--	--	--	--	3,279	168	2,937	1,125	49
Emmet	38	141	88	23	--	--	--	1,335	280	719	2	53
Gladwin	1	1	133	--	104	--	--	333	464	355	36	--
Grand Traverse	104	104	188	--	--	--	--	104	522	2,717	1,040	58
Iosco	31	47	777	--	--	--	--	80	1,281	774	85	--
Isabella	--	--	--	--	--	--	--	--	89	299	324	--
Kalkaska	101	40	111	61	--	--	--	1,229	225	1,345	288	61
Lake	--	--	750	--	--	--	--	161	3,316	19,815	4,099	97
Leelanau	--	--	--	--	--	--	--	21	74	485	--	--
Manistee	1,042	1,355	2,090	521	--	625	--	1,988	5,249	10,496	2,953	1,203
Mason	193	--	970	--	--	--	--	156	5,209	3,991	1,291	76
Mecosta	--	--	35	--	--	--	--	45	967	1,603	344	--
Midland	--	--	833	--	417	--	--	1	73	22	5	--
Missaukee	56	8	215	--	--	--	--	382	4,563	668	151	61
Montmorency	274	293	2,078	--	--	--	--	3,557	1,244	6,678	493	106
Newaygo	35	104	89	--	--	--	--	330	3,107	5,614	1,792	--
Oceana	--	--	644	--	--	--	--	95	2,353	3,728	903	--
Ogemaw	35	44	1,217	--	--	--	--	1,214	1,473	6,072	1,383	30
Osceola	3	8	789	5	--	--	--	251	3,647	3,191	814	11
Oscoda	63	69	921	--	--	--	--	3,289	740	3,029	492	96
Otsego	146	120	272	28	--	--	--	1,720	247	1,108	52	28
Presque Isle	91	106	2,704	16	--	--	--	1,669	2,769	1,975	145	--
Roscommon	--	--	665	16	--	--	--	1,704	1,030	3,713	829	15
Wexford	208	209	533	104	--	104	--	4,485	10,848	4,708	1,156	235
Total	3,421	3,646	24,979	972	521	791	--	38,085	62,370	102,852	21,554	2,448
S. Lower Peninsula												
Allegan	168	642	4	--	278	653	240	592	2,676	3,521	2,454	--
Barry	60	229	--	--	99	232	85	209	989	1,506	861	--
Calhoun	--	--	--	--	--	--	--	--	--	279	129	--
Cass	--	--	--	--	--	--	--	--	--	--	--	624
Eaton	--	--	--	--	--	--	--	--	--	--	--	--
Kalamazoo	23	89	--	--	38	90	33	81	365	463	333	--
Kent	--	--	1	--	--	--	--	1	7	52	3	--
Montcalm	--	--	8	--	--	--	--	10	56	380	89	--
Muskegon	--	--	127	--	--	--	--	168	1,833	8,504	2,237	--
Ottawa	18	70	26	--	30	71	26	98	461	1,582	524	--
St. Joseph	--	--	--	--	--	--	210	--	232	1,174	211	--
Van Buren	85	326	--	--	141	331	122	298	1,344	1,700	1,225	--
Total	354	1,356	166	--	586	1,377	716	1,457	7,963	19,161	8,071	624
State total	26,181	23,419	79,348	40,143	1,107	50,918	716	144,753	138,171	126,109	29,712	11,142

(Table 9 continued on next page)

[1/] Includes only those counties that supplied pulpwood in 1984.

(Table 9 continued)

MINNESOTA

Unit and county[1]	All species	Species group: Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Aspen-Birch												
Carlton	31,411	--	2,484	--	677	449	124	1,599	59	--	23,906	2,113
Cook	60,739	--	10,816	--	6,316	143	263	13,536	--	--	29,280	385
Koochiching	289,309	--	29,029	--	10,499	6,087	83	33,453	4,873	52	194,016	10,512
Lake	105,185	--	10,787	--	6,364	1,877	2,649	16,388	728	--	64,939	1,114
St. Louis	453,044	--	35,087	--	37,669	19,646	7,007	24,852	638	--	306,569	20,711
Total	939,688	--	88,203	--	61,525	28,202	10,126	89,828	6,298	52	618,710	34,835
Northern Pine												
Aitkin	66,204	--	552	--	196	107	31	443	557	--	58,763	5,492
Becker	18,399	--	--	--	1,065	255	40	--	19	--	15,891	1,129
Beltrami	160,796	--	11,555	--	7,292	1,711	265	6,676	1,938	117	127,474	3,106
Cass	152,722	--	3,442	--	12,449	2,146	278	714	458	201	129,647	2,157
Clearwater	75,064	--	1,559	--	1,407	432	80	1,512	634	--	67,910	1,412
Crow Wing	31,629	--	61	--	4,886	521	--	101	--	--	26,060	--
Hubbard	112,362	--	414	--	4,512	1,206	265	2,063	88	--	100,849	2,965
Itasca	374,033	--	38,910	--	10,330	4,863	528	7,696	1,015	--	304,509	6,171
Lake of the Woods	33,605	--	903	--	13,359	2,264	--	6,590	161	--	9,662	666
Mahnomen	8,724	--	--	--	360	--	--	--	117	--	8,106	141
Roseau	7,904	--	149	--	5,798	--	--	1,918	39	--	--	--
Wadena	12,346	--	--	--	6,656	951	186	--	--	--	4,482	71
Total	1,053,788	--	57,545	--	68,310	14,456	1,673	27,713	5,026	318	853,353	23,310
Central Hardwood												
Kanabec	3,171	--	--	--	--	--	--	--	--	--	3,171	--
Mille Lacs	18,496	--	--	--	167	60	--	35	10	--	18,224	--
Morrison	10,400	--	--	--	156	17	--	--	--	--	10,227	--
Otter Tail	72	--	--	--	--	--	--	--	72	--	--	--
Pine	28,443	--	--	--	1,022	640	186	--	30	--	23,505	2,817
Sherburne	1,907	--	--	--	1,247	654	6	--	--	--	--	--
Todd	834	--	--	--	156	17	--	--	--	--	661	--
Total	63,323	--	--	--	2,748	1,388	192	35	112	--	55,788	2,817
Prairie												
Polk	1,136	--	--	--	--	--	--	--	94	--	1,042	--
Stevens	13	--	--	--	--	13	--	--	--	--	--	--
Total	1,149	--	--	--	--	13	--	--	94	--	1,042	--
State total	2,057,948	--	145,748	--	132,583	44,059	11,991	117,576	11,530	370	1,528,893	60,962

(Table 9 continued on next page)

[1] Includes only those counties that supplied pulpwood in 1984.

(Table 9 continued)

MINNESOTA

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Aspen-Birch												
Carlton	--	--	--	--	--	--	--	--	--	--	--	--
Cook	--	--	--	--	--	--	--	--	--	--	--	--
Koochiching	--	--	497	--	--	--	--	156	52	--	--	--
Lake	--	--	339	--	--	--	--	--	--	--	--	--
St. Louis	--	--	865	--	--	--	--	--	--	--	--	--
Total	--	--	1,701	--	--	--	--	156	52	--	--	--
Northern Pine												
Aitkin	--	--	63	--	--	--	--	--	--	--	--	--
Becker	--	--	--	--	--	--	--	--	--	--	--	--
Beltrami	--	--	464	--	--	64	--	124	10	--	--	--
Cass	--	--	954	--	--	151	--	58	67	--	--	--
Clearwater	--	--	52	--	--	--	--	52	14	--	--	--
Crow Wing	--	--	--	--	--	--	--	--	--	--	--	--
Hubbard	--	--	--	--	--	--	--	--	--	--	--	--
Itasca	--	--	11	--	--	--	--	--	--	--	--	--
Lake of the Woods	--	--	--	--	--	--	--	--	--	--	--	--
Mahnomen	--	--	--	--	--	--	--	--	--	--	--	--
Roseau	--	--	--	--	--	--	--	--	--	--	--	--
Wadena	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	1,544	--	--	215	--	234	91	--	--	--
Central Hardwood												
Kanabec	--	--	--	--	--	--	--	--	--	--	--	--
Mille lacs	--	--	--	--	--	--	--	--	--	--	--	--
Morrison	--	--	--	--	--	--	--	--	--	--	--	--
Otter Tail	--	--	--	--	--	--	--	--	--	--	--	--
Pine	--	--	243	--	--	--	--	--	--	--	--	--
Sherburne	--	--	--	--	--	--	--	--	--	--	--	--
Todd	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	243	--	--	--	--	--	--	--	--	--
Prairie												
Polk	--	--	--	--	--	--	--	--	--	--	--	--
Stevens	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--	--
State total	--	--	3,488	--	--	215	--	390	143	--	--	--

(Table 9 continued on next page)

1/ Includes only those counties that supplied pulpwood in 1944.

(Table 9 continued)

WISCONSIN

Unit and county[1/]	All species	Species group: Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Northeastern												
Florence	74,472	137	6,735	3,023	2,222	2,954	749	4,816	194	1,133	38,191	36
Forest	141,814	--	12,200	2,087	279	6,684	152	9,766	165	4,866	50,176	--
Langlade	118,351	--	4,697	873	1,173	3,763	10	1,103	79	3,959	47,914	--
Lincoln	98,468	--	3,269	1,233	1,525	4,857	356	1,647	302	5,326	47,191	--
Marinette	153,737	--	12,385	719	9,990	7,528	322	2,941	456	1,758	99,369	938
Menominee	49,410	--	--	10,570	8,133	1,671	2,795	--	--	379	13,263	--
Oconto	50,824	--	1,173	163	5,105	6,441	253	163	56	673	31,156	--
Oneida	148,129	--	11,506	1,022	10,134	12,399	2,199	9,214	667	3,174	52,583	--
Shawano	21,238	--	46	833	527	4,160	205	20	58	385	8,270	--
Vilas	106,537	--	7,881	925	7,384	5,285	2,042	3,527	88	874	47,119	--
Total	962,980	137	59,892	21,448	46,472	55,742	9,083	33,197	2,065	22,527	435,232	974
Northwestern												
Ashland	98,913	--	6,047	127	1,230	6,578	196	3,536	369	2,939	47,897	--
Barron	7,383	--	--	--	649	355	15	--	--	7	5,380	--
Bayfield	186,500	--	902	--	27,673	11,354	2,073	30	80	616	110,810	634
Burnett	64,767	--	--	--	18,930	3,580	232	12	25	27	41,226	211
Douglas	112,914	--	2,750	--	38,682	6,232	536	157	4	593	54,912	634
Iron	60,093	--	1,483	409	268	1,200	314	527	74	891	31,912	--
Polk	3,013	--	--	19	1,029	262	18	--	--	1	1,596	--
Price	110,165	--	4,919	921	1,892	3,283	202	1,372	442	5,548	47,267	--
Rusk	63,978	--	219	119	--	1,454	--	78	48	3,699	32,710	--
Sawyer	128,327	--	1,614	215	1,357	2,918	180	1,527	209	3,676	80,024	--
Taylor	63,414	--	1,948	827	28	3,036	--	418	215	2,046	25,409	--
Washburn	63,045	--	191	--	8,261	5,106	536	40	--	638	43,265	--
Total	962,512	--	20,073	2,637	99,999	45,358	4,302	7,697	1,466	20,681	522,408	1,479
Central												
Adams	35,447	--	24	--	13,313	14,730	1,988	--	--	28	343	--
Chippewa	25,686	--	11	--	728	886	36	50	--	1,182	13,946	--
Clark	50,766	--	44	6	1,580	2,933	131	14	--	1,251	25,878	--
Eau Claire	14,698	--	65	--	3,117	6,416	51	--	--	49	2,355	--
Jackson	39,589	--	--	35	20,138	6,666	649	--	--	21	5,335	--
Juneau	26,121	--	--	369	15,366	3,691	76	--	--	73	2,081	--
Marathon	58,113	--	506	546	1,515	8,304	418	282	10	666	30,420	--
Marquette	12,270	--	--	--	679	7,416	1,147	11	22	208	394	--
Monroe	17,602	--	--	--	9,104	5,693	435	--	--	71	389	--
Portage	24,357	--	73	60	3,468	7,323	1,917	295	251	253	6,200	--
Waupaca	16,729	--	--	22	218	5,974	572	49	35	473	6,474	--
Waushara	26,278	--	--	--	4,610	18,827	1,775	--	--	--	961	--
Wood	29,897	--	--	10	3,558	5,439	1,350	80	6	350	11,788	--
Total	377,553	--	723	1,048	77,394	94,298	10,545	781	324	4,625	106,564	--
Southwestern												
Buffalo	1,382	--	--	--	106	1,139	132	--	--	--	5	--
Crawford	24	--	--	--	--	--	--	--	--	--	24	--
Dunn	11,235	--	--	--	2,639	8,170	252	--	--	--	--	--
Grant	8	--	--	--	--	--	--	--	--	--	8	--
Iowa	35	--	--	--	--	35	--	--	--	--	--	--
La Crosse	898	--	--	--	58	774	66	--	--	--	--	--
Pepin	398	--	--	--	47	223	84	42	--	--	--	--
Pierce	26	--	--	--	--	--	--	--	--	2	--	--
Richland	185	--	--	--	53	132	--	--	--	--	--	--
St. Croix	237	--	--	--	74	163	--	--	--	--	--	--
Sauk	7,473	--	--	--	2,082	4,660	572	--	--	2	--	--
Trempealeau	5,720	--	--	--	50	247	4,908	40	--	--	8	--
Total	27,621	--	--	--	5,109	15,543	5,954	82	--	4	45	--
Southeastern												
Brown	331	--	--	--	--	14	--	--	--	--	317	--
Columbia	10,782	--	--	--	685	7,124	1,252	--	--	4	--	--
Door	1,694	--	--	--	21	6	--	--	--	--	1,667	--
Fond du Lac	34	--	--	--	--	11	23	--	--	--	--	--
Green Lake	1,816	--	--	--	38	1,396	382	--	--	--	--	--
Manitowoc	15	--	--	--	--	15	--	--	--	--	--	--
Outagamie	792	--	--	--	--	345	50	--	--	5	299	--
Ozaukee	24	--	--	--	--	24	--	--	--	--	--	--
Sheboygan	754	--	--	--	--	647	107	--	--	--	--	--
Walworth	149	--	--	--	--	149	--	--	--	--	--	--
Waukesha	1,294	--	--	--	--	1,030	264	--	--	--	--	--
Total	17,685	--	--	--	744	10,761	2,078	--	--	9	2,283	--
State total	2,348,351	137	80,688	25,133	229,718	221,702	31,962	41,757	3,855	47,846	1,066,532	2,453

[1/] Includes only those counties that supplied pulpwood in 1954.

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Northeastern												
Florence	119	--	3,551	892	—	1,871	--	4,608	1,911	773	173	384
Forest	2,110	569	10,980	3,761	--	5,281	68	20,859	8,643	1,006	455	1,707
Langlade	1,508	109	10,009	2,814	--	5,440	--	24,203	8,977	152	50	1,518
Lincoln	1,172	--	5,438	581	--	4,997	—	11,422	8,717	17	--	418
Marinette	129	5	5,703	539	--	1,554	--	4,085	3,721	1,155	283	157
Menominee	2	1,151	412	814	--	3,238	--	3,781	1,856	823	128	394
Oconto	102	--	1,760	91	--	633	--	1,168	1,377	392	98	20
Oneida	1,452	--	21,783	2,121	--	1,503	—	9,988	7,962	119	5	298
Shawano	11	149	990	194	--	1,086	--	2,034	1,368	680	173	49
Vilas	492	--	16,400	1,358	—	312	--	8,769	3,412	391	191	87
Total	7,097	1,983	77,026	13,165	--	25,915	68	90,917	47,944	5,508	1,556	5,032
Northwestern												
Ashland	441	--	7,913	1,250	--	3,579	--	9,248	6,525	826	17	195
Barron	2	--	921	—	--	5	--	4	5	24	14	1
Bayfield	30	--	27,108	301	--	239	--	1,904	1,282	1,420	18	26
Burnett	--	--	325	--	--	14	--	104	25	52	--	4
Douglas	--	--	7,223	86	--	124	--	348	568	65	--	--
Iron	689	--	8,532	820	--	3,396	--	5,408	3,721	306	17	126
Polk	--	--	78	--	--	1	--	1	2	6	--	--
Price	1,080	--	14,443	1,173	--	4,343	—	11,288	10,336	1,216	—	440
Rusk	1,011	--	7,573	426	--	3,673	10	5,252	3,681	3,193	480	352
Sawyer	1,568	--	16,234	1,863	--	1,440	—	8,634	5,241	1,342	168	117
Taylor	784	--	5,528	621	—	2,024	--	7,962	11,532	807	208	21
Washburn	--	--	2,481	32	--	224	--	961	1,073	138	36	63
Total	5,605	--	98,359	6,572	--	19,062	10	51,114	43,992	9,395	958	1,345
Central												
Adams	--	--	55	--	--	22	--	52	112	3,880	899	1
Chippewa	479	--	2,702	499	--	743	--	1,681	1,666	779	269	29
Clark	159	31	4,123	397	--	1,783	21	2,356	4,905	3,558	1,521	75
Eau Claire	17	--	318	21	--	64	--	136	440	1,264	361	24
Jackson	--	--	606	--	--	42	--	101	1,212	3,660	1,044	30
Juneau	--	--	179	--	--	155	--	237	272	2,702	913	7
Marathon	195	--	1,095	368	—	5,121	--	2,983	4,859	648	150	27
Marquette	--	--	208	--	--	52	--	177	83	1,274	599	--
Monroe	--	--	276	--	--	102	--	152	304	837	211	28
Portage	17	--	514	--	--	129	—	358	550	2,011	880	58
Waupaca	38	--	195	49	--	335	--	431	909	652	258	45
Waushara	--	--	--	--	--	--	--	6	5	94	--	--
Wood	17	--	770	52	—	75	—	592	1,622	2,780	1,408	--
Total	922	31	11,041	1,386	--	8,623	21	9,262	16,939	24,139	8,513	374
Southwestern												
Buffalo	—	--	--	--	--	--	--	--	--	--	--	--
Crawford	--	--	--	--	--	--	--	--	--	--	--	--
Dunn	--	--	52	--	--	--	--	--	--	122	--	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--
Iowa	--	--	--	--	--	--	--	--	--	--	--	--
La Crosse	--	--	--	--	--	--	--	--	--	—	--	--
Pepin	—	--	--	--	--	--	--	--	--	41	21	--
Pierce	—	--	--	--	--	3	--	13	--	8	--	--
Richland	--	--	—	—	--	--	--	--	--	—	--	--
St. Croix	--	--	--	--	--	--	--	--	--	--	--	--
Sauk	--	--	1	--	--	3	--	46	54	35	15	3
Trempealeau	--	—	5	--	--	1	--	36	1	324	98	2
Total	--	--	58	--	--	7	--	95	55	530	134	5
Southeastern												
Brown	--	--	--	--	--	--	--	--	--	--	--	--
Columbia	--	--	156	31	--	8	--	—	104	719	660	39
Door	--	--	--	--	--	--	--	--	--	--	--	--
Fond du Lac	--	--	--	--	--	--	--	--	--	--	--	--
Green Lake	—	--	—	—	—	--	--	--	--	--	--	--
Manitowoc	--	—	--	--	--	--	--	--	--	--	--	--
Outagamie	--	--	9	--	--	15	--	24	25	15	5	--
Ozaukee	--	--	--	--	—	--	--	--	--	--	--	--
Sheboygan	--	--	--	--	--	--	--	--	--	--	--	--
Walworth	--	--	--	--	--	—	--	--	--	--	--	--
Waukesha	--	--	—	--	--	--	--	--	--	--	--	--
Total	—	--	165	31	--	23	--	24	129	734	665	39
State total	13,624	2,014	186,649	21,154	--	53,630	99	151,412	109,059	40,306	11,826	6,795

[1/] Includes only those counties that supplied pulpwood in 1984.

Table 10.--Central States pulpwood production by State and destination, 1980-1984

(In thousand standard cords, unpeeled)

Year	Illinois			Indiana			Iowa			Missouri		
		Destination			Destination			Destination			Destination	
	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States
1980	102	45	57	178	69	109	44	39	5	105	38	67
1981	100	43	57	185	68	117	32	26	6	111	44	67
1982	76	19	57	185	51	134	14	10	4	81	23	58
1983	91	31	60	226	62	164	16	11	5	114	39	75
1984	82	29	53	206	56	150	20	14	6	86	32	54

Table 11.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1980-1984

(In thousand standard cords, unpeeled)

Type of material and area	1980	1981	1982	1983	1984
Roundwood					
Illinois	19	19	--	--	--
Indiana, Iowa, Missouri	75	60	40	69	62
Total	94	79	40	69	62
Residue					
Illinois	28	3	--	--	--
Indiana, Iowa, Missouri	99	112	63	79	70
Total	127	115	63	79	70
All material	221	194	103	148	132

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Pulpwood production in the North Central Region by County, 1984. Resour. Bull. NC-98. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1986. 26 p.

Discusses 1984 production and receipts and recent production for other years in the Lake and Central States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1984 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows four production classes by county.

KEY WORDS: Roundwood, residue, receipts, Lake States, Central States.

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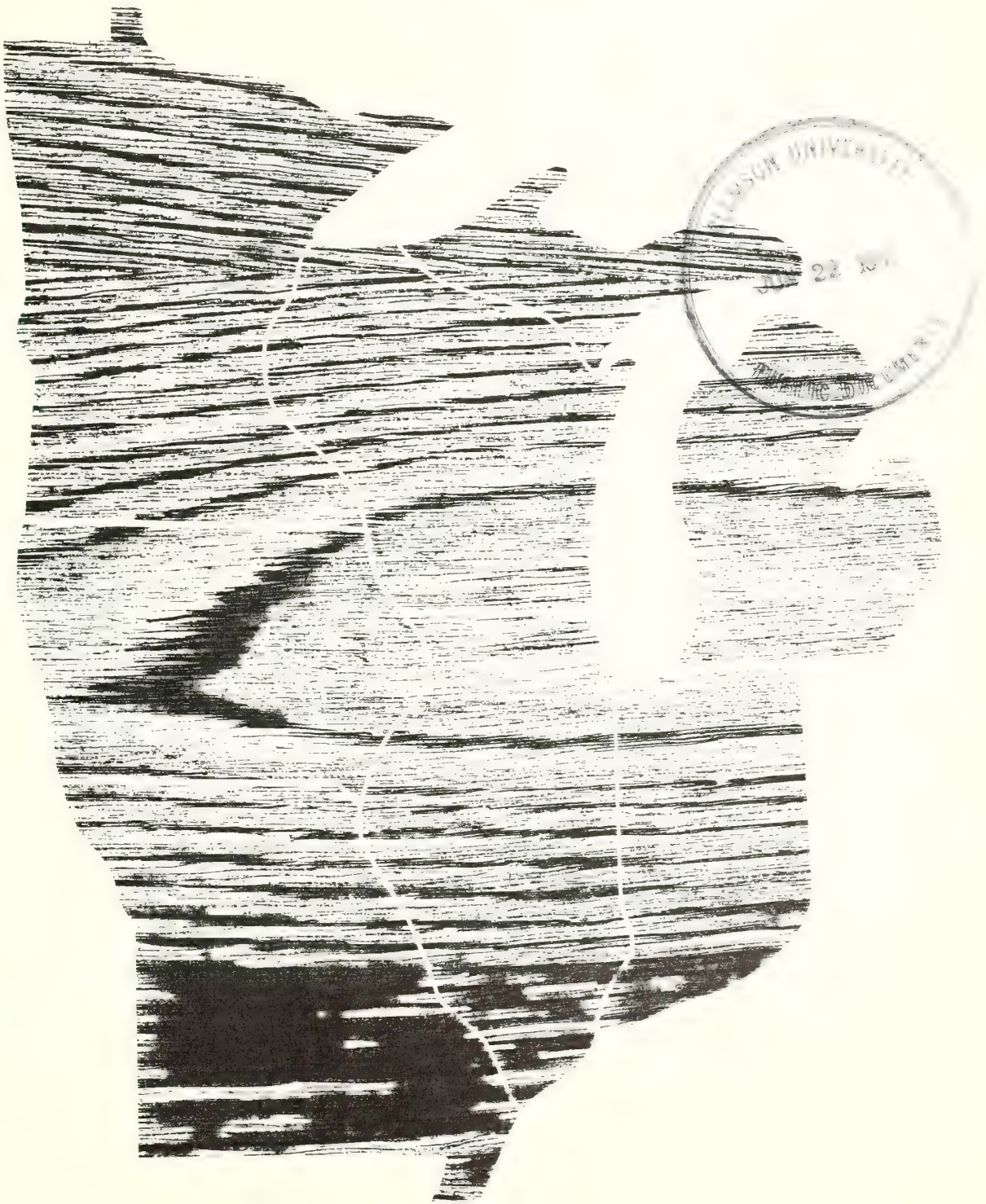
Resource Bulletin **NC-99**

Veneer Industry and Timber Use, North Central Region, 1984

James E. Blyth and W. Brad Smith



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North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
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St. Paul, Minnesota 55108
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VENEER INDUSTRY AND TIMBER USE, NORTH CENTRAL REGION, 1984

James E. Blyth, *Principal Market Analyst*
and **W. Brad Smith**, *Mensurationist*

HIGHLIGHTS

Lake States

- Lake States loggers harvested 60.5 million board feet of veneer logs in 1984, down 6 percent from 1980 when the last veneer industry study was made. Principal production declines since 1980 were in aspen, elm, and white oak. Log exports to other States and Canada reached a record high 13.7 million board feet.
- Twenty-eight Lake States veneer mills received 50.2 million board feet of logs in 1984, off 14 percent from 1980. Imports from seven States and Canada climbed after hitting a 35-year low in 1980.
- More than 98 percent of the wood and bark residue generated at Lake States mills in 1984 was used.

Central States

- Central States veneer log production in 1984 was 22.1 million board feet, up 1 percent from 1980. Leading species cut were white oak, walnut, and red oak. Exports from the Central States climbed 87 percent from 1980 to 5.7 million board feet.
- From 1980, veneer log receipts at 23 Central States mills rose 1 percent to 33.2 million board feet. Imports of 16.8 million board feet came from 18 other States.
- Disposal of wood and bark residue at mills was not a problem. Industrial fuel was the leading use for this residue.

This report of 1984 veneer log production and receipts in the North Central Region is a continuation of a series begun more than 28 years ago. On a total volume basis, veneer logs are the third most valuable industrial roundwood product harvested, outranked only by pulpwood and saw logs. The last veneer industry study was in 1980.

Current detailed veneer log production[1] and receipt information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. In addition, researchers need veneer log harvest and receipt information for planning projects and for analyzing and appraising the veneer industry.

All known veneer mills in the United States and Canada using North Central States timber reported their veneer log receipts in 1984 by species groups and State of origin. For the wood and bark residue they generated in 1984, they reported (in percent) the disposal of coarse wood residue (chippable), fine wood residue, and bark in six disposal categories. Their cooperation is gratefully acknowledged. Data were collected, using a formal questionnaire, in a cooperative effort by this Station, the Northeastern Forest Experiment Station, and the Indiana Department of Natural Resources. Data are not shown for logs exported to countries other than Canada.

All board feet data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.14 to all log volumes reported by veneer mills in Doyle scale and applying a multiplier of 1.04 to all log volumes reported by mills in Scribner Dec. C Scale. To convert to Doyle log scale, multiply the International scale volume by 0.8772. To convert to Scribner Dec. C log scale, multiply the International scale volume by 0.9615.

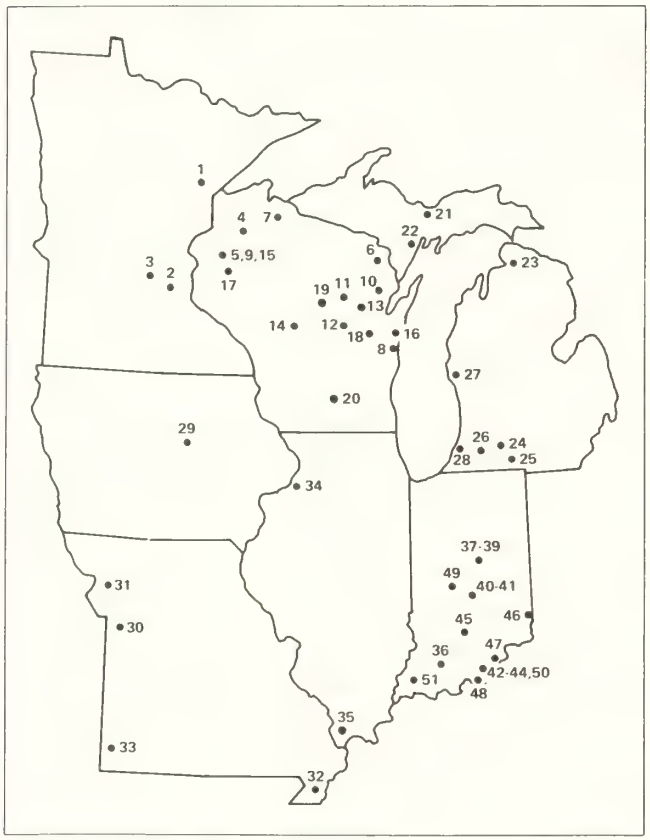
This report presents the results of the survey, analyzes and interprets the data where appropriate, compares the results with 1980 or earlier years, and discusses trends in veneer log production and use. After a brief national overview, the report is divided

---

[1]*Production is the volume of veneer logs cut from a specific area; receipts are the volume of veneer logs received by mills in a specific area regardless of geographic source.*

into two sections—Lake States (Michigan, Minnesota, and Wisconsin) and Central States (Illinois, Indiana, Iowa, and Missouri)—because different species are grown and used as veneer logs in each area.

Fifty-one veneer mills operated in the region in 1984, one more than in 1980 (fig. 1). Between 1980 and 1984 two mills closed and three new mills opened. Wisconsin and Illinois each had a net gain of one mill; Michigan had a net loss of one mill.



MINNESOTA		
Number	Name of mill	Location
1	Diamond Match Co.	Cloquet
2	Allen Wood Products, Inc.	Henderson
3	Elk River Box Company	Elk River
	WISCONSIN	
4	Birchwood Lumber & Veneer Co.	Birchwood
5	Birchwood Mfg. Co.	Rice Lake
6	Goodman Forest Ind. Ltd.	Goodman
7	Louisiana-Pacific Corp.	Mellen
8	Eggers Industries	Two Rivers
9	Brunette Ind. Wood Prod.	Rice Lake
10	Linwood, Inc.	Gillett
11	Wisconsin Timber & Land Co.	Matoon

NATIONAL OVERVIEW

National hardwood plywood production in 1984 fell 2 percent below 1983, and fell 6 percent below 1980 to 1.227 million square feet[2] surface measure.

Housing starts in 1984 climbed 2.4 percent above 1983 to 1,744,700 units, the highest total since 1979.

[2]*Source: U.S. Department of Commerce, Bureau of the Census. Current Industrial Report Series MA-24F.*

WISCONSIN		
Number	Name of mill	Location
12	Marion Plywood Corp.	Marion
13	Weber Veneer & Plywood Co.	Shawano
14	Weyerhaeuser Co.	Marshfield
15	Brunette Box & Veneer	Rice Lake
16	Dufeck Mfg. Co.	Denmark
17	Ebner Box Factory	Cameron
18	Seymour Woodenware Co.	Seymour
19	Hatley Veneer Co.	Hatley
20	Fox-Haase Mfg. Inc.	De Forest
	MICHIGAN	
21	Cliffs Forest Products Co.	Munising
22	Anthony & Co.	Escanaba
23	Manthei Bros.	Petosky
24	A. C. Hensel Mfg. Co.	Augusta
25	International Veneer Co.	Coldwater
26	Fruit Growers Package Co.	Paw Paw
27	Michigan Crate & Basket	Shelby
28	Riverside Package Co.	Riverside
	IOWA	
29	R. S. Bacon Veneer Co.	Grundy Center
	MISSOURI	
30	Pleasant Hill Veneer Corp.	Pleasant Hill
31	Missouri Valley Walnut Co.	St. Joseph
32	Tipton Box Co.	Caruthersville
33	Crumbliss Wood Products	Neosho
	ILLINOIS	
34	Swords Veneer & Lumber Co.	Rock Island
35	Lawrence Box & Basket	Cobden
	INDIANA	
36	Jasper Veneer Mills	Jasper
37	Central Veneer Co., Inc.	Indianapolis
38	Curry-Miller Veneers, Inc.	Indianapolis
39	Indiana Veneers, Inc.	Indianapolis
40	David R. Webb Co.	Edinburg
41	Amos-Hill Veneer Co.	Edinburg
42	B. L. Curry & Sons	New Albany
43	Chester B. Stem, Inc.	New Albany
44	Adams Custom Veneer Co.	New Albany
45	National Veneer & Lumber Co.	Seymour
46	Pierson-Hollowell Co., Inc.	Lawrenceburg
47	Roberts & Strack Veneer Co.	Clarksville
48	Norstram Veneers	Mauckport
49	Theising Veneer Co., Inc.	Mooresville
50	New Albany Box & Basket Co., Inc.	New Albany
51	Evansville Veneer Co.	Evansville

Figure 1.—*Location of active veneer mills in the North Central Region, 1984.*

In 1980, only 1,328,000 housing units were started. Housing starts are a major indicator of hardwood plywood demand in interior walls, kitchen and vanity cabinets, flush doors, flooring, and furniture.

Domestic producers are concerned about hardwood plywood imports. Japan was the largest exporter of hardwood plywood to the U.S. 25 years ago, and Korea was the leader 15 years ago. During the last 5 years Indonesia became the largest hardwood plywood exporter to the U.S. In 1980 Indonesia had only 29 hardwood plywood mills, compared with 95 mills in 1984; installed capacity rose 173 percent during this period. Indonesia has begun to manufacture door skins, and may become the primary supplier of skins to the American flush door industry.

LAKE STATES

Production

During 1984 loggers cut 60.5 million board feet of veneer logs in the Lake States, down 3.7 million board feet from 1980. Sixty-two percent of the volume was supplied by three species:

Species	Million board feet
Red oak	16.9
Hard maple	12.3
Aspen	8.3

Major production declines since 1980 were in aspen (12.0 million board feet), elm (2.8 million board feet), and white oak (2.3 million board feet). Elm production continued to fall because Dutch elm disease has wiped out much of the Lake States elm resource. Output of red oak climbed 6.2 million board feet from 1980 to a record 16.9 million board feet. Demand for ash was the highest in more than 30 years.

Log exports rose to a record 13.7 million board feet. By volume, principal export markets were:

Destination	Million board feet
Canada	8.5
Ohio	2.1
Indiana	1.8

Illinois, Iowa, Missouri, Kentucky, and West Virginia received the remaining export log volume.

Michigan producers cut 31.8 million board feet of veneer logs, a decline of 14 percent since 1976, but more than half of the total Lake States output. Hard maple, red oak, and pine accounted for 71 percent of the Michigan harvest. Pine harvesting surged from 240,000 board feet in 1980 to 6.4 million board feet in 1984 because of new market opportunities. Closure of a mill was a major reason for aspen output falling from 20.0 million board feet in 1980 to 270,000 board feet in 1984. Out-of-State markets took nearly two-thirds of Michigan's output. Pine, hard maple, and red oak were the dominant species shipped out-of-State.

Red oak and aspen accounted for more than three-fifths of Wisconsin's harvest of 23.0 million board feet. Exports to Michigan from Wisconsin were nominal compared to one-quarter of the harvest shipped to Michigan in 1980. Total production increased 2.1 million board feet from 1980.

Principal species cut in Minnesota were aspen (2.9 million board feet) and red oak (1.6 million board feet). Together they accounted for more than three-fourths of the total Minnesota harvest of 5.7 million board feet.

Mill Receipts

Lake States veneer mills received 50.2 million board feet of logs in 1984, down 8.5 million board feet from 1980. Major declines in receipts were in aspen, elm, and hard maple. Imports rose after hitting a 35-year low in 1980 and after falling for all reported years since 1966. However, imports from Canada fell to a nominal level.

Michigan receipts at eight mills plunged to about one-half the level in 1980, partially as a result of a major mill closure. The Michigan decline was concentrated in aspen. In the Minnesota-Wisconsin area, receipts climbed by 5 million board feet from 1980; gains were mainly in aspen and red oak.

Mill Residue[3]

More than 98 percent of the mill residue generated in each class (coarse, fine, and bark) during 1984 was used. Coarse residue was used mainly for industrial fuel (45 percent), domestic fuel (26 percent), and miscellaneous products such as small dimension and specialty items (23 percent). Industrial fuel was the primary use for fine residue and bark.

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[3]*Mill residue generated at veneer mills is classed as: (1) bark; (2) coarse (wood)—suitable for chipping, such as veneer cores; (3) fine (wood)—not suitable for chipping such as veneer clippings.*

Industry Outlook

Lake States veneer log production will depend heavily on the strength of the new housing and remodeling industries, the strength of the American dollar, the ability of foreign plywood producers to compete in our markets, the degree of competitive inroads by the flakeboard industry, and the ability of Lake States veneer mills to control their production costs and find market niches for specialty veneers. Lake States veneer log production will probably remain near current levels during the next 2 or 3 years if our gross national product (GNP) has real annual growth of 2 to 4 percent.

As pine plantations mature in the Lake States, use of pine for veneer may continue to increase. Demand for veneer in containers is likely to continue dropping.

CENTRAL STATES

Production

Central States loggers cut 22.1 million board feet of veneer logs in 1984, up 1 percent from 1980 and the second lowest annual recorded harvest in the last 29 years.

Three species furnished three-fourths of the volume:

Species	Million board feet
White oak	7.6
Walnut	5.2
Red oak	4.0

After falling to 1.3 million board feet in 1970, red oak output has risen steadily (except in 1980) and is one of the preferred species for furniture. Walnut output in 1984 was about one-third of the peak production in 1968, when it was in high demand for furniture. Cottonwood and soft maple veneer log production remained low; both are container veneer species.

Major production changes between 1980 and 1984 were:

Species	Thousand board feet
White oak	−1,020
Red oak	+580
Cottonwood	+544

Exports expanded 87 percent from 1980 to 5.7 million board feet; primary purchasers were in Ohio (51 percent), Wisconsin (22 percent), and Michigan (16 percent).

Indiana supplied three-fifths of the Central States veneer log harvest, and 73 percent of the Indiana log volume remained in the State. Each of the other States cut between 2.1 and 3.3 million board feet. Indiana production increased 24 percent from 1980, Missouri production increased nominally, and production dropped in Illinois and Iowa.

Red oak and walnut output was more concentrated in Indiana in 1984 than in 1980. Missouri increased its share of the cottonwood harvest.

Mill Receipts

Twenty-three Central States veneer mills received 33.2 million board feet of veneer logs in 1984, up 1 percent from the 1980 total. Eighteen States, from all areas except the Far West, supplied 16.8 million board feet of logs to the Central States. Kentucky, Pennsylvania, and Onio each furnishing more than 2 million board feet. Major imports included white oak from Tennessee, Kentucky, and Ohio; red oak from Pennsylvania, Michigan, and Kentucky; pecan from Louisiana; and black cherry from Pennsylvania. Other States furnishing veneer logs were Wisconsin, Oklahoma, Arkansas, Mississippi, Texas, Kansas, Minnesota, Alabama, Virginia, New York, Maryland, and Nebraska.

Indiana's 16 veneer mills consumed 84 percent of the veneer log receipts in the Central States, including more than 90 percent each of the ash, black cherry, hard maple, pecan, soft maple, yellow-poplar, and sycamore.

Mill Residue

Wood and bark residue have not been a disposal problem since 1974. Ninety-six percent of the coarse wood residue, 87 percent of the fine wood residue, and 97 percent of the bark were used in 1984. Industrial fuel continued to be the leading use for each residue category; other uses were in pulp manufacturing, mulch, livestock bedding, and domestic (household) fuel.

Industry Outlook

Most factors affecting future hardwood veneer log output in the Lake States will also affect future output in the Central States. Foreign competition is likely to be a major threat to Central States veneer mills. Container veneer log markets were stronger in 1984 than in 1980, but will continue to face severe competition from plastics and other substitutes.

Table 1.--Production and imports of veneer logs, Lake States, 1984

(In thousand board feet)[1/]

Species and destination	Total receipts[3/]	Production by States[2/]				Imports		
		Michigan	Minnesota	Wisconsin	Regional total	Other U.S.	Canada	Total imports
Pine								
Minnesota-Wisconsin	162	110	--	52	162	--	--	--
Exported[4/]	--	6,287	--	--	6,287	--	--	--
Total	162	6,397	--	52	6,449	--	--	--
Ash								
Michigan	824	824	--	--	824	--	--	--
Minnesota-Wisconsin	655	313	40	271	624	31	--	31
Exported[4/]	--	53	--	5	58	--	--	--
Total	1,479	1,190	40	276	1,506	31	--	31
Aspen								
Michigan	114	114	--	--	114	--	--	--
Minnesota-Wisconsin	8,143	156	2,897	5,090	8,143	--	--	--
Total	8,257	270	2,897	5,090	8,257	--	--	--
Basswood								
Michigan	269	269	--	--	269	--	--	--
Minnesota-Wisconsin	2,198	147	295	1,615	2,057	141	--	141
Total	2,467	416	295	1,615	2,326	141	--	141
Beech								
Michigan	262	262	--	--	262	--	--	--
Minnesota-Wisconsin	278	230	--	48	278	--	--	--
Exported[4/]	--	235	--	--	235	--	--	--
Total	540	727	--	48	775	--	--	--
Black cherry								
Michigan	170	71	--	--	71	99	--	99
Minnesota-Wisconsin	6	--	--	6	6	--	--	--
Exported[4/]	--	135	--	22	157	--	--	--
Total	176	206	--	28	234	99	--	99
Butternut								
Exported[4/]	--	--	--	1	1	--	--	--
Total	--	--	--	1	1	--	--	--
Cottonwood								
Michigan	456	399	--	--	399	57	--	57
Minnesota-Wisconsin	595	--	429	166	595	--	--	--
Total	1,051	399	429	166	994	57	--	57
Elm								
Michigan	6	6	--	--	6	--	--	--
Minnesota-Wisconsin	418	104	--	314	418	--	--	--
Exported[4/]	--	32	22	42	96	--	--	--
Total	424	142	22	356	520	--	--	--
Hard maple								
Michigan	4,168	4,168	--	--	4,168	--	--	--
Minnesota-Wisconsin	6,625	4,157	26	2,417	6,600	25	--	25
Exported[4/]	--	1,445	--	41	1,486	--	--	--
Total	10,793	9,770	26	2,458	12,254	25	--	25
Paper birch								
Michigan	827	820	--	7	827	--	--	--
Minnesota-Wisconsin	508	262	69	177	508	--	--	--
Exported[4/]	--	112	--	--	112	--	--	--
Total	1,335	1,194	69	184	1,447	--	--	--

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Total receipts[3]	Production by States[2]				Imports		
		Michigan	Minnesota	Wisconsin	Regional total	Other U.S.	Canada	Total imports
Pecan								
Minnesota-Wisconsin	34	--	--	3	3	31	--	31
Exported[4]	--	4	--	--	4	--	--	--
Total	34	4	--	3	7	31	--	31
Red oak								
Michigan	2,869	2,113	520	104	2,737	132	--	132
Minnesota-Wisconsin	12,177	2,270	960	8,078	11,308	811	58	869
Exported[4]	--	2,034	87	757	2,878	--	--	--
Total	15,046	6,417	1,567	8,939	16,923	943	58	1,001
Soft maple								
Michigan	274	274	--	--	274	--	--	--
Minnesota-Wisconsin	1,486	75	81	1,299	1,455	31	--	31
Exported[4]	--	--	--	17	17	--	--	--
Total	1,760	349	81	1,316	1,746	31	--	31
Sycamore								
Michigan	97	80	--	--	80	17	--	17
Total	97	80	--	--	80	17	--	17
Walnut								
Michigan	105	29	--	--	29	76	--	76
Exported[4]	--	221	2	205	428	--	--	--
Total	105	250	2	205	457	76	--	76
White oak								
Michigan	1,953	315	--	--	315	1,638	--	1,638
Minnesota-Wisconsin	300	19	47	79	145	155	--	155
Exported[4]	--	646	--	228	874	--	--	--
Total	2,253	980	47	307	1,334	1,793	--	1,793
Yellow birch								
Michigan	1,320	1,285	--	35	1,320	--	--	--
Minnesota-Wisconsin	2,837	1,542	250	964	2,756	--	81	81
Exported[4]	--	42	--	46	88	--	--	--
Total	4,157	2,869	250	1,045	4,164	--	81	81
Yellow poplar								
Michigan	23	23	--	--	23	--	--	--
Total	23	23	--	--	23	--	--	--
Other hardwoods								
Exported[4]	--	70	--	900	970	--	--	--
Total	--	70	--	900	970	--	--	--
All species								
Michigan	13,737	11,052	520	146	11,718	2,019	--	2,019
Minnesota-Wisconsin	36,422	9,385	5,094	20,579	35,058	1,225	139	1,364
Exported[4]	--	11,316	111	2,264	13,691	--	--	--
Total	50,159	31,753	5,725	22,989	60,467	3,244	139	3,383

[1] International 1/4-inch rule.

[2] Vertical columns of figures under box heading "Production by States" present the amount of veneer logs cut in each State.

[3] Production minus exports plus imports.

[4] Veneer logs shipped to States outside the Lake States and to Canada.

Table 2.--Veneer log production and receipts in the Lake States by species, 1980 and 1984

(In thousand board feet)[1/]

Species	Production			Receipts		
	1980	1984	Change	1980	1984	Change
Pine	240	6,449	6,209	240	162	-78
Ash	831	1,506	675	805	1,479	674
Aspen	20,245	8,257	-11,988	19,958	8,257	-11,701
Basswood	2,072	2,326	254	2,100	2,467	367
Beech	1,107	775	-332	1,050	540	-510
Black cherry	229	234	5	77	176	99
Cottonwood	1,322	994	-328	1,254	1,051	-203
Elm	3,323	520	-2,803	2,130	424	-1,706
Hard maple	12,756	12,254	-502	11,941	10,793	-1,148
Paper birch	1,569	1,447	-122	1,476	1,335	-141
Red oak	10,687	16,923	6,236	9,749	15,046	5,297
Soft maple	1,457	1,746	289	1,481	1,760	279
Walnut	328	457	129	114	105	-9
White oak	3,647	1,334	-2,313	1,953	2,253	300
Yellow birch	4,151	4,164	13	4,408	4,157	-251
Other hardwoods	177	1,081	904	0	154	154
All species	64,141	60,467	-3,674	58,736	50,159	-8,577

[1/] International 1/4-inch rule.

Table 3.--Veneer log production by species group for selected years, Lake States, 1946-1984

(In million board feet)[1/]

Year	All species	Species group													
		Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Paper birch	Walnut	Other species
1946	110.6	2.3	4.0	10.4	5.6	[2/]26.8	0.4	16.6	[3/]40.3	--	[4/]3.1	--	--	--	1.1
1952	78.2	--	1.4	10.4	3.1	[2/]18.2	--	11.5	[3/]23.8	--	[4/]5.1	--	--	--	[5/]4.7
1954	72.0	.8	.3	9.2	3.2	[2/]17.3	2.7	10.5	[3/]20.9	--	[4/]5.5	--	--	--	1.6
1956	79.0	.7	.8	10.3	5.7	[2/]20.3	2.1	9.6	20.1	3.7	[4/]4.5	--	--	0.3	.9
1958	52.7	.6	1.7	7.1	1.8	[2/]13.1	2.2	8.9	9.7	2.2	[4/]4.8	--	--	.2	.4
1960	54.0	1.0	2.1	6.2	1.0	[2/]14.1	1.9	5.1	10.9	2.9	[4/]7.6	--	--	.6	.6
1963	50.5	.6	1.5	6.6	.3	[2/]10.9	.4	5.7	10.5	2.2	[4/]8.9	--	--	2.3	.6
1965	51.7	.7	.6	6.0	.5	[2/]11.3	1.4	6.3	11.8	1.8	[4/]9.0	--	--	.9	1.4
1966	50.9	1.1	.7	4.5	.5	[2/]9.5	1.4	5.7	13.1	1.5	9.1	0.3	--	1.5	2.0
1968	45.5	1.0	.6	3.6	.5	8.3	1.4	5.4	9.4	1.2	8.2	.5	1.9	1.7	1.8
1970	34.4	.4	1.3	3.2	.3	4.4	1.3	3.8	8.8	.8	6.8	.3	1.2	.6	1.2
1972	42.2	.6	2.6	2.9	1.1	5.2	1.3	5.1	9.2	1.0	9.7	.3	1.2	1.4	.6
1974	68.7	.9	24.2	2.4	.7	4.2	1.8	6.1	11.7	2.0	11.1	.6	1.3	1.0	.7
1976	69.6	1.0	21.8	2.1	1.2	4.5	1.4	6.7	14.0	1.1	11.8	.7	1.2	.7	1.4
1980	64.1	0.8	20.2	2.1	1.1	4.2	1.3	3.3	12.8	1.5	10.7	3.6	1.6	.3	.6
1984	60.5	1.5	8.3	2.3	.8	4.2	1.0	.5	12.3	1.7	16.9	1.3	1.4	.5	7.8

[1/] International 1/4-inch rule.

[2/] Includes paper birch.

[3/] Includes soft maple.

[4/] Includes white oak.

[5/] Includes ash and cottonwood.

Table 4.--Lake States veneer log production, receipts, exports and imports for selected years, 1946-1984

(In million board feet)[1/]

Year	Produced in the Lake States and received at Lake States mills	Exported[2/]	Imported[3/]	Total production in Lake States	Total receipts in Lake States
1946	109.7	0.9	5.9	110.6	115.6
1948	116.0	.8	12.0	116.8	128.0
1950	86.0	.6	15.7	86.6	101.7
1952	77.8	.4	12.1	78.2	89.9
1954	71.6	.4	12.1	72.0	83.7
1956	78.7	.3	13.4	79.0	92.1
1958	51.5	1.2	6.0	52.7	57.5
1960	51.9	2.1	12.5	54.0	64.4
1963	45.0	5.5	7.7	50.5	52.7
1965	49.0	2.7	7.6	51.7	56.6
1966	45.8	5.1	9.6	50.9	55.4
1968	39.7	5.8	7.9	45.5	47.6
1970	31.4	3.0	5.6	34.4	37.0
1972	37.7	4.5	4.6	42.2	42.3
1974	63.4	5.3	4.1	68.7	67.5
1976	63.3	6.3	3.0	69.6	66.3
1980	56.6	7.5	2.1	64.1	58.7
1984	46.8	13.7	3.4	60.5	50.2

[1/] International 1/4-inch rule.

[2/] From Lake States to other States and Canada

[3/] From other States and Canada into Lake States.

Table 5.--Veneer log receipts in the Lake States by species group for selected years, 1952-1984

(In million board feet)[1/]

Year	All species	Species group												
		Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Paper birch	Other species
1952	89.9	--	1.4	10.9	3.2	[2/]27.1	--	11.7	[3/]24.9	--	[4/]5.3	--	--	[5/]5.4
1954	83.7	0.8	.3	10.3	3.2	[2/]25.0	2.7	10.9	[3/]22.4	--	[4/]6.5	--	--	1.6
1956	92.1	.7	.8	10.6	5.7	[2/]28.5	3.0	10.2	21.9	4.7	4/5.0	--	--	1.0
1958	57.5	.6	1.7	7.3	1.8	[2/]17.2	2.2	9.2	9.6	2.5	4/5.0	--	--	.4
1960	64.4	1.1	2.1	6.8	.9	[2/]18.9	3.3	6.2	12.2	3.6	4/8.4	--	--	.9
1963	52.7	.7	1.6	6.7	.3	[2/]14.3	.7	4.9	11.1	2.6	4/9.3	--	--	.5
1965	56.6	.7	.6	6.3	.5	[2/]14.5	2.1	6.3	13.2	1.9	4/9.3	--	--	1.2
1966	55.4	1.1	.7	4.8	.5	[2/]14.7	2.3	5.8	12.8	1.8	9.7	.2	--	1.0
1968	47.6	1.0	.6	3.9	.5	10.2	2.1	5.2	9.0	1.3	8.3	.2	4.0	1.3
1970	37.0	.3	1.3	3.6	.3	6.1	1.4	3.8	9.0	.9	7.7	.2	1.9	.5
1972	42.3	.6	2.4	3.1	.7	6.3	1.3	5.3	9.4	1.2	10.1	.2	1.5	.2
1974	67.5	.9	24.3	2.6	.5	4.6	1.8	5.7	11.9	2.3	11.1	.1	1.3	.4
1976	66.3	.9	21.5	2.2	1.0	4.6	1.4	6.3	12.4	1.4	12.1	.1	1.3	1.1
1980	58.7	.8	20.0	2.1	1.0	4.4	1.3	2.1	11.9	1.5	9.7	2.0	1.5	.4
1984	50.2	1.5	8.3	2.5	.5	4.2	1.0	.4	10.8	1.8	15.0	2.3	1.3	.6

[1/] International 1/4-inch rule.

[2/] Includes paper birch.

[3/] Includes soft maple.

[4/] Includes white oak.

[5/] Includes ash and cottonwood.

Table 6.--Percent of veneer log production and receipts by species group, Lake States, 1956 and 1984

(In percent)

Species group	Production		Receipts	
	1956	1984	1956	1984
Ash	0.9	2.5	0.8	2.9
Aspen	1.0	13.6	0.9	16.5
Basswood	13.0	3.8	11.5	4.9
Beech	7.2	1.3	6.2	1.1
Birch	25.7	9.3	30.9	11.0
Cottonwood	2.7	1.6	3.2	2.1
Elm	12.2	.9	11.1	.8
Hard maple	25.4	20.3	23.8	21.5
Soft maple	4.7	2.9	5.1	3.5
Oak	5.7	30.2	5.4	34.5
Other species	1.5	13.6	1.1	1.2
All species	100.0	100.0	100.0	100.0

Table 7.--Production and disposition of softwood and hardwood veneer mill residue by type of residue and use, Lake States, 1984

(In thousand tons green weight)

State and type of use	Wood residue						Bark	
	Total		Coarse[1/]		Fine[2/]			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Wisconsin								
Fiber products	--	9.84	--	2.26	--	7.58	--	--
Industrial fuel	0.20	48.21	--	15.36	0.20	32.85	0.09	18.39
Domestic fuel	.13	3.33	0.13	3.07	--	.26	--	.12
Miscellaneous[3/]	--	6.13	--	5.23	--	.90	--	.16
Not used[4/]	--	--	--	--	--	--	--	.28
Total	.33	67.51	.13	25.92	.20	41.59	.09	18.95
Minnesota								
Industrial fuel	--	5.87	--	2.23	--	3.64	--	1.68
Domestic fuel	--	.12	--	.12	--	--	--	--
Not used[4/]	--	.15	--	--	--	.15	--	.04
Total	--	6.14	--	2.35	--	3.79	--	1.72
Michigan								
Fiber products	--	.65	--	--	--	.65	--	.26
Industrial fuel	--	16.17	--	.08	--	16.09	--	7.06
Domestic fuel	--	6.97	--	6.97	--	--	--	.24
Miscellaneous[3/]	--	3.94	--	3.65	--	.29	--	.22
Not used[4/]	--	.14	--	--	--	.14	--	.06
Total	--	27.87	--	10.70	--	17.17	--	7.84
All Lake States								
Fiber products	--	10.49	--	2.26	--	8.23	--	.26
Industrial fuel	.20	70.25	--	17.67	.20	52.58	.09	27.13
Domestic fuel	.13	10.42	.13	10.16	--	.26	--	.36
Miscellaneous[3/]	--	10.07	--	8.88	--	1.19	--	.38
Not used[4/]	--	.29	--	--	--	.29	--	.38
Total	.33	101.52	.13	38.97	.20	62.55	.09	28.51

[1/] Suitable for chipping, such as veneer cores.

[2/] Not suitable for chipping, such as veneer clippings.

[3/] Livestock bedding, mulch, small dimension, and specialty items.

[4/] Includes residue burned as waste.

Table 8.--Production and imports of veneer logs, Central States, 1984

(In thousand board feet)[1/]

Species and destination	Total receipts[3/]	Production by States[2/]					Imports		
		Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports
Pine									
Indiana	304	--	--	--	--	--	--	304	304
Illinois-Iowa-Missouri	72	--	--	--	--	--	--	72	72
Exported[4/]	--	--	21	22	--	43	--	--	--
Total	376	--	21	22	--	43	--	376	376
Ash									
Indiana	585	38	334	--	--	372	3	210	213
Illinois-Iowa-Missouri	19	--	--	--	3	3	16	--	16
Exported[4/]	--	31	119	--	--	150	--	--	--
Total	604	69	453	--	3	525	19	210	229
Basswood									
Indiana	14	--	14	--	--	14	--	--	--
Exported[4/]	--	11	--	130	--	141	--	--	--
Total	14	11	14	130	--	155	--	--	--
Beech									
Exported[4/]	--	--	116	--	--	116	--	--	--
Total	--	--	116	--	--	116	--	--	--
Black cherry									
Indiana	1,098	--	13	--	--	13	91	994	1,085
Illinois-Iowa-Missouri	33	--	--	--	--	--	33	--	33
Exported[4/]	--	--	22	--	--	22	--	--	--
Total	1,131	--	35	--	--	35	124	994	1,118
Butternut									
Illinois-Iowa-Missouri	1	--	--	--	--	--	1	--	1
Total	1	--	--	--	--	--	1	--	1
Cottonwood									
Indiana	415	--	326	--	--	326	--	89	89
Illinois-Iowa-Missouri	1,732	11	--	--	1,653	1,664	--	68	68
Exported[4/]	--	--	57	23	--	80	--	--	--
Total	2,147	11	383	23	1,653	2,070	--	157	157
Elm									
Indiana	72	--	20	--	--	20	46	6	52
Illinois-Iowa-Missouri	50	--	--	5	--	5	45	--	45
Total	122	--	20	5	--	25	91	6	97
Gum									
Indiana	184	--	166	--	--	166	--	18	18
Exported[4/]	--	--	--	--	3	3	--	--	--
Total	184	--	166	--	3	169	--	18	18
Hard maple									
Indiana	551	--	73	--	--	73	466	12	478
Illinois-Iowa-Missouri	18	--	--	--	--	--	18	--	18
Exported[4/]	--	--	146	25	--	171	--	--	--
Total	569	--	219	25	--	244	484	12	496
Pecan									
Indiana	3,778	53	377	--	34	464	3	3,311	3,314
Exported[4/]	--	39	49	--	14	102	--	--	--
Total	3,778	92	426	--	48	566	3	3,311	3,314

(Table 8 continued on next page)

(Table 8 continued)

Species and destination	Total receipts[3/]	Production by States[2/]					Imports		
		Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports
Red oak									
Indiana	6,932	1	2,751	--	--	2,752	992	3,188	4,180
Illinois-Iowa-Missouri	849	--	--	58	89	147	672	30	702
Exported[4/]	--	234	285	557	23	1,099	--	--	--
Total	7,781	235	3,036	615	112	3,998	1,664	3,218	4,882
Soft maple									
Indiana	377	--	315	--	--	315	3	59	62
Illinois-Iowa-Missouri	14	--	--	--	--	--	14	--	14
Exported[4/]	--	--	--	31	--	31	--	--	--
Total	391	--	315	31	--	346	17	59	76
Sycamore									
Indiana	354	--	280	--	--	280	--	74	74
Exported[4/]	--	--	49	--	--	49	--	--	--
Total	354	--	329	--	--	329	--	74	74
Walnut									
Indiana	3,582	598	1,373	394	225	2,590	102	890	992
Illinois-Iowa-Missouri	1,099	--	63	386	350	799	176	124	300
Exported[4/]	--	82	1,437	69	222	1,810	--	--	--
Total	4,681	680	2,873	849	797	5,199	278	1,014	1,292
White oak									
Indiana	9,089	1,580	3,094	285	63	5,022	87	3,980	4,067
Illinois-Iowa-Missouri	1,278	62	39	47	620	768	239	271	510
Exported[4/]	--	506	1,204	61	1	1,772	--	--	--
Total	10,367	2,148	4,337	393	684	7,562	326	4,251	4,577
Yellow birch									
Indiana	3	--	--	--	--	--	3	--	3
Total	3	--	--	--	--	--	3	--	3
Yellow poplar									
Indiana	621	--	565	--	--	565	--	56	56
Illinois-Iowa-Missouri	17	17	--	--	--	17	--	--	--
Exported[4/]	--	72	--	--	--	72	--	--	--
Total	638	89	565	--	--	654	--	56	56
Other hardwoods									
Indiana	53	11	16	--	--	27	2	24	26
Exported[4/]	--	--	36	--	--	36	--	--	--
Total	53	11	52	--	--	63	2	24	26
All species									
Indiana	28,012	2,281	9,717	679	322	12,999	1,798	13,215	15,013
Illinois-Iowa-Missouri	5,182	90	102	496	2,715	3,403	1,214	565	1,779
Exported[4/]	--	975	3,541	918	263	5,697	--	--	--
Total	33,194	3,346	13,360	2,093	3,300	22,099	3,012	13,780	16,792

[1/] International 1/4-inch rule

[2/] Vertical columns of figures under box heading "Production by States" present the amount of veneer logs cut in each State.

[3/] Production minus exports plus imports.

[4/] Veneer logs shipped to States outside the Central States and to Canada.

Table 9.--Veneer log production and receipts in the Central States by species, 1980 and 1984

(In thousand board feet)[1/]

Species	Production			Receipts		
	1980	1984	Change	1980	1984	Change
Pine	--	43	43	373	376	3
Ash	506	525	19	507	604	97
Basswood	100	155	55	7	14	7
Black cherry	76	35	-41	1,000	1,131	131
Cottonwood	1,526	2,070	544	1,662	2,147	485
Elm	52	25	-27	696	122	-574
Gum	235	169	-66	254	184	-70
Hard maple	249	244	-5	615	569	-46
Pecan (hickory)	566	566	0	3,404	3,778	374
Red oak	3,418	3,998	580	4,360	7,781	3,421
Soft maple	226	346	120	238	391	153
Sycamore	270	329	59	293	354	61
Walnut	5,104	5,199	95	5,901	4,681	-1,220
White oak	8,582	7,562	-1,020	12,583	10,367	-2,216
Yellow-poplar	825	654	-171	957	638	-319
Other hardwoods	84	179	95	65	57	-8
All species	21,819	22,099	280	32,915	33,194	279

[1/] International 1/4-inch rule.

Table 10.--Veneer log production by species group for selected years, Central States, 1956-1984

(In million board feet)[1/]

Year	All species	Species group										
		Cotton-wood	Elm	Hard maple	Pecan (hickory)	Red oak	Soft maple	Syca-more	Walnut	White oak	Yellow-poplar	Other species
1956	33.1	8.0	0.9	0.8	0.1	1.1	1.8	0.6	10.6	3.4	1.6	4.2
1958	32.4	8.9	.6	1.1	.1	1.0	.5	.5	10.8	2.6	1.1	5.2
1960	39.9	11.2	2.0	1.2	.1	1.5	1.2	2.5	13.2	1.6	1.6	3.8
1963	38.0	7.4	.7	1.6	.8	.9	1.0	1.8	15.5	1.4	2.3	4.6
1966	36.7	6.2	[2/] .7	1.4	1.1	2.3	.5	1.0	14.7	1.9	3.0	3.9
1968	37.0	4.1	.7	1.3	3.0	2.1	.4	1.2	16.1	3.6	1.3	3.2
1970	23.5	4.8	.6	.8	1.5	1.3	.5	1.3	8.1	1.7	.8	2.1
1972	26.2	3.5	.5	1.1	2.4	1.7	.4	.7	10.0	3.3	1.2	1.4
1974	29.1	4.0	.7	1.1	1.2	2.9	.6	.9	8.5	5.2	1.2	2.8
1976	27.4	2.3	[3/]	.4	1.0	3.8	.9	.6	7.5	7.7	1.3	1.9
1980	21.8	1.5	.1	.2	.6	3.4	.2	.3	5.1	8.6	.8	1.0
1984	22.1	2.1	[3/]	.2	.6	4.0	.3	.3	5.2	7.6	.7	1.1

[1/] International 1/4-inch rule.

[2/] Estimated.

[3/] Less than 50 thousand board feet.

Table 11.--Veneer log receipts by species group for selected years, Central States, 1956-1984

(In million board feet)[1/]

Year	All species	Species group										
		Cotton-wood	Elm	Hard maple	Pecan (hickory)	Red oak	Soft maple	Syca-more	Walnut	White oak	Yellow-poplar	Other species
1956	44.4	10.9	0.8	1.2	0.6	1.3	0.8	1.3	11.4	6.7	2.8	6.6
1958	41.6	10.2	.6	1.7	.3	1.3	.3	1.2	13.0	4.8	1.9	6.3
1960	50.2	10.4	1.0	2.9	.2	1.4	.5	2.3	17.1	3.6	2.8	8.0
1963	52.2	8.6	1.0	3.1	1.6	.9	.8	2.0	21.2	2.3	2.8	7.9
1966	48.2	6.7	[2/] 1.0	3.6	1.6	2.0	.4	1.2	17.9	2.1	4.4	7.3
1968	48.8	5.7	1.0	2.7	4.9	2.3	.5	1.1	18.4	5.2	1.9	5.1
1970	28.0	4.7	.5	1.3	3.0	.8	.6	1.4	10.0	2.0	1.1	2.6
1972	35.1	4.9	.3	2.4	5.7	1.6	.5	.9	11.0	4.0	1.2	2.6
1974	39.7	5.6	.7	1.3	3.6	3.8	.7	1.0	10.1	7.7	1.3	3.9
1976	36.1	2.6	.2	1.4	4.3	3.1	.5	.6	8.3	10.8	1.4	2.9
1980	32.9	1.7	.7	.6	3.4	4.4	.2	.3	5.9	12.6	.9	2.2
1984	33.2	2.1	.1	.6	3.8	7.8	.4	.3	4.7	10.4	.6	2.4

[1/] International 1/4-inch rule.

[2/] Estimated.

Table 12.--Percent of veneer log production and receipts by species group, Central States, 1956 and 1984

(In percent)

Species group	Production		Receipts	
	1956	1984	1956	1984
Cottonwood	24.2	9.4	24.5	6.5
Elm	2.7	.1	1.8	.4
Hard maple	2.4	1.1	2.7	1.7
Pecan (hickory)	0.3	2.6	1.4	11.4
Red oak	3.3	18.1	2.9	23.4
Soft maple	5.5	1.6	1.8	1.2
Sycamore	1.8	1.5	2.9	1.1
Walnut	32.0	23.5	25.7	14.1
White oak	10.3	34.2	15.1	31.2
Yellow-poplar	4.8	2.9	6.3	1.9
Other species	12.7	5.0	14.9	7.1
All species	100.0	100.0	100.0	100.0

Table 13.--Production and disposition of softwood and hardwood veneer mill residue by type of residue and use, Central States, 1984

(In thousand tons green weight)

State and type of use	Wood residue							
	Total		Coarse[1/]		Fine[2/]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Indiana								
Fiber products	0.03	3.77	0.03	3.77	--	--	--	--
Industrial fuel	.58	47.32	.20	17.45	0.38	29.87	0.17	13.58
Domestic fuel	--	.33	--	.33	--	--	--	--
Miscellaneous[3/]	--	2.45	--	.04	--	2.41	--	2.23
Not used[4/]	--	2.35	--	--	--	2.35	--	--
Total	.61	56.22	.23	21.59	.38	34.63	.17	15.81
Illinois-Iowa-Missouri								
Industrial fuel	--	5.69	--	2.18	--	3.51	--	1.60
Domestic fuel	--	.36	--	.36	--	--	.03	.74
Miscellaneous[3/]	.02	.50	.01	.37	.01	.13	--	--
Not used[4/]	.13	3.83	.05	1.07	.08	2.76	.01	.58
Total	.15	10.38	.06	3.98	.09	6.40	.04	2.92
All States								
Fiber products	.03	3.77	.03	3.77	--	--	--	--
Industrial fuel	.58	53.01	.20	19.63	.38	33.38	.17	15.18
Domestic fuel	--	.69	--	.69	--	--	.03	.74
Miscellaneous[3/]	.02	2.95	.01	.41	.01	2.54	--	2.23
Not used[4/]	.13	6.18	.05	1.07	.08	5.11	.01	.58
Total	.76	66.60	.29	25.57	.47	41.03	.21	18.73

[1/] Suitable for chipping such as veneer cores.

[2/] Not suitable for chipping such as veneer clippings.

[3/] Livestock bedding, mulch, small dimension, and speciality items.

[4/] Includes residue burned as waste.

Blyth, James E.; Smith, W. Brad.
Veneer industry and timber use, North Central Region, 1984. Resour. Bull. NC-99. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1986. 16 p.

Shows 1984 veneer log production and receipts by species in the Lake States (Michigan, Minnesota, and Wisconsin) and in the Central States (Illinois, Indiana, Iowa, and Missouri). Comparisons are made with 1980 data. Includes tables showing veneer log production and receipts (for selected years) since 1946 in the Lake States and since 1956 in the Central States.

KEY WORDS: Imports, exports, veneer mills, wood residue, bark.

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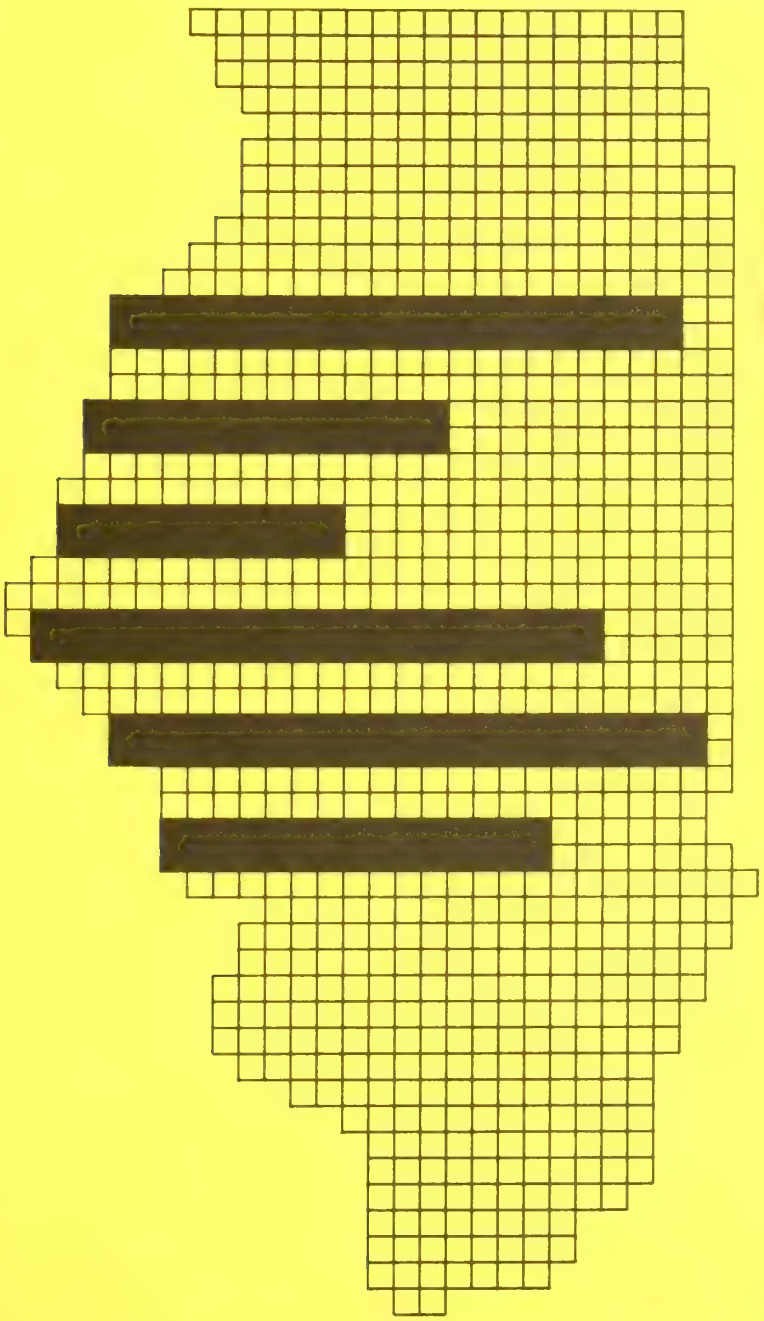
Resource Bulletin **NC-100**

Illinois Timber Industry—An Assessment of Timber Product Output and Use

James E. Blyth, John A. Sester, and Gerhard K. Raile



North Central Forest Experiment Station,
Forest Service—U.S. Department of Agriculture,
1992 Folwell Avenue,
St. Paul, Minnesota 55108
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FOREWORD

This bulletin discusses recent Illinois forest industry trends and contains the results of a detailed study of forest industry, roundwood production, and associated primary mill wood and bark residue in Illinois in 1983. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current forest industry and roundwood information for planning projects.

Special thanks are given to the primary wood-using firms, households, and loggers that supplied information for this study and to the Illinois Department of Conservation foresters who canvassed the primary wood-using mills. Their cooperation is greatly appreciated.

Quantities shown may differ slightly from one table to another because of rounding differences, but these differences are insignificant.

HIGHLIGHTS

- Illinois roundwood production rose to 147.2 million cubic feet in 1983 from 40.1 million cubic feet in 1961.
- Fuelwood accounted for three-fourths (78 percent) of the roundwood harvest compared to one-eighth of the harvest in 1961.
- White oak, red oak, and soft maple, the leading species cut, furnished 62 percent of the total harvest.
- Most (96 percent) of the roundwood cut came from private land.
- Saw log production climbed from 131 million board feet in 1961 to 161 million board feet in 1983.
- Major saw log species were red oak, white oak, cottonwood, soft maple, hickory, and ash.
- Average lumber production per sawmill rose 112 percent between 1961 and 1983.
- During 1983 Illinois produced 91 thousand cords of pulpwood, 8 thousand cords fewer than in 1961.
- Illinois produced 1,690,000 cords of fuelwood including 1,633,000 cords from roundwood and the remainder from primary wood-using mill residue.
- More than half (53 percent) of the roundwood fuel was white oak and red oak.
- Rural woodland supplied 46 out of every 100 cords of roundwood fuel.
- Logging residue generated in 1983 was estimated to be the equivalent of 284,000 cords of pulpwood, enough to supply a 525 ton/day pulpmill for 1 year.
- Eighty-six percent or more of each residue class (coarse, fine, bark) generated at Illinois primary mills was used.

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ILLINOIS TIMBER INDUSTRY—AN ASSESSMENT OF TIMBER PRODUCT OUTPUT AND USE

James E. Blyth, *Principal Market Analyst,*
St. Paul, Minnesota,
John A. Sester, *Staff Forester,*
Forest Products,
Illinois Department of Conservation,
Springfield, Illinois,
and **Gerhard K. Raile,** *Mensurationist,*
St. Paul, Minnesota

Cutting and processing of timber in Illinois is an important segment of the State's economy. As part of the recent inventory of Illinois' forest resource by the USDA Forest Service, we conducted a study to determine (1) the output of timber products in Illinois in 1983 by type of product, species group, owner class, and county of origin and (2) the quantity of bark and coarse and fine wood residue generated in 1983 at Illinois primary wood-using mills by county of origin and type of use for softwoods and hardwoods. All known mills using Illinois logs and bolts (primary wood-using mills) were canvassed. Most of the canvassing was completed by the Illinois Department of Conservation. Many comparisons were made with a similar mill study in 1961, the time of the previous forest inventory.

PRIMARY FOREST INDUSTRY—ROUNDWOOD PRODUCTION

In Illinois, the active (operating) primary wood-using mill population fell from 355 in 1961 to 185 in 1983. Sawmills dominate the forest industry in terms of numbers of mills and volume of wood used. Of the 185 mills operating in 1983, 178 were sawmills. Although the active sawmills declined from 314 in 1961, the number of large sawmills (each cutting 3 million board feet or more annually) rose from 2 in 1961 to 14 in 1983. Most of the numerical decline from 1961 was in small sawmills each cutting less than 1 million board feet annually. Eight pulpmills operated in 1961; none were operating in 1983. Although the industry is widely scattered throughout the State, major mills are concentrated in south-central and southern Illinois (fig. 1).

Roundwood production climbed from 40.1 million cubic feet in 1961 to 147.2 million cubic feet in 1983. Illinois roundwood products in 1961 and 1983 ranked by order of output in 1983 were:

Product	Roundwood production	
	1961	1983
	(Percent)	
Fuelwood	13.0	77.5
Saw logs	49.6	18.1
Pulpwood	18.5	3.1
Posts	.7	.5
Veneer logs	4.2	.3
Other	14.0	.5
Total	100.0	100.0

White oak, red oak, and soft maple, the principal species cut, provided 62 percent of the total harvest in 1983:

Species	1983 roundwood production
	(Million cubic feet)
White oak	43.4
Red oak	35.9
Soft maple	11.9
Hickory	11.1
Elm	8.8
Ash	6.6
Cottonwood	5.1
Other species	24.4
Total	147.2

Ninety-six percent of the harvest came from private land. More than two-thirds (68.8 percent) of the harvest was in the Prairie Unit, 17.9 percent came from the Claypan Unit, and the Southern Unit furnished 13.3 percent.

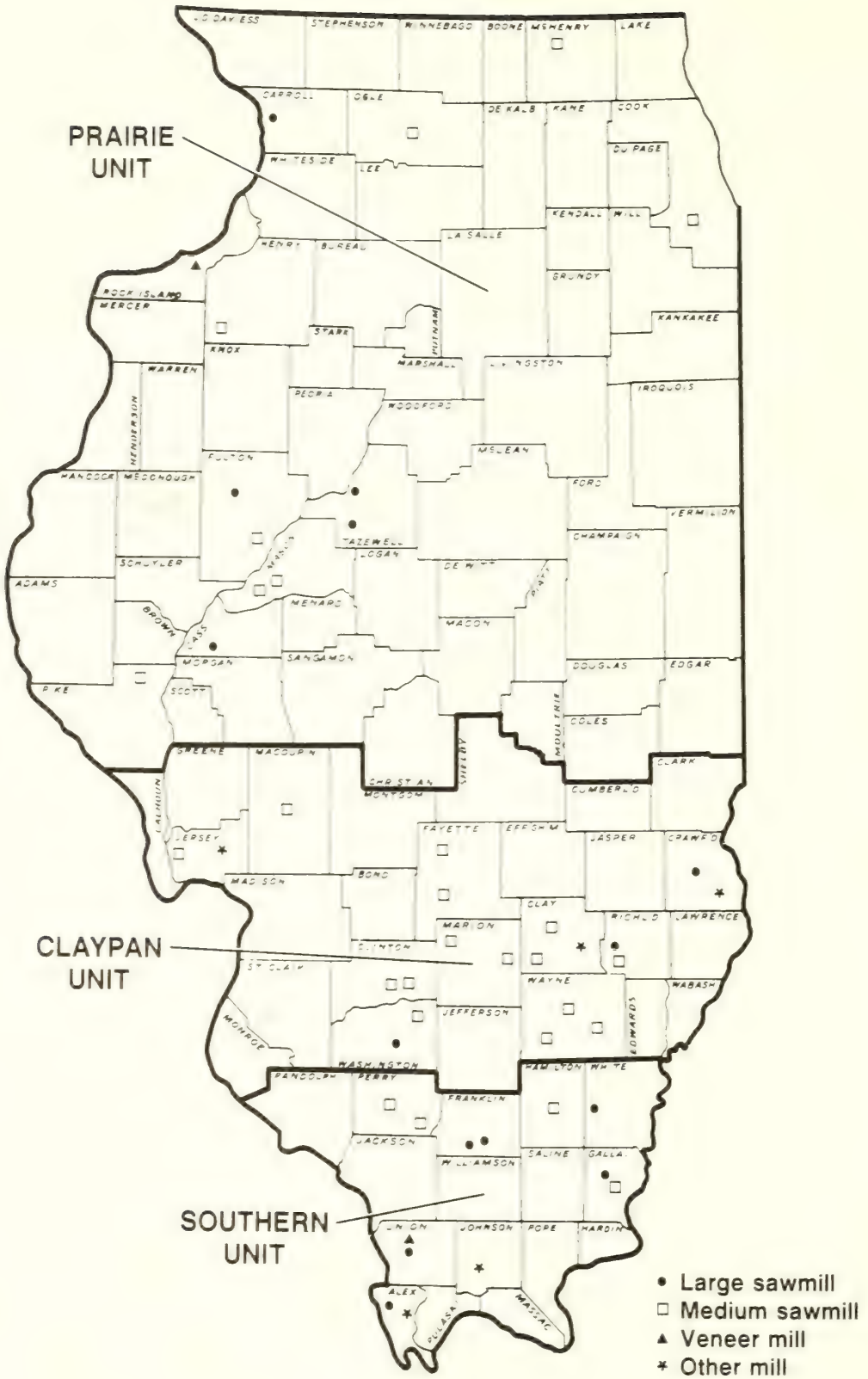

Figure 1.—*Active primary wood-using mills and Forest Survey Units in Illinois, 1983. Sawmills are classed by volume of lumber produced in 1983: large = 3 million board feet or more; medium = 1 to 2.999 million board feet (smaller sawmills not shown). Forest Survey Units are the geographic areas used by the Forest Inventory and Analysis Project to report periodic inventories and use of the Nation's forest resources.*

SAW LOGS

Illinois loggers cut 161 million board feet of saw logs in 1983, up 30 million board feet from 1961. More than 99 percent was hardwoods. Principal species cut were:

Species	Saw log production volume (Million board feet, Int'l. ¼-inch rule)
Red oak	74
White oak	27
Cottonwood	14
Soft maple	10
Hickory	8
Ash	7

Shipments out-of-State were 23 million board feet, destined for Missouri (13 million board feet), Indiana (8 million board feet), Iowa, and Kentucky.

Major production gains since 1961 were in red oak (32 million board feet), white oak (8 million board feet), and hickory (6 million board feet). Oak is in high demand for furniture.

From 1961, soft maple and elm production dropped 9 million and 8 million board feet, respectively. Elm saw log production declines since 1961 reflect the devastation of elm by Dutch elm disease.

The Claypan Unit was the leading supplier of saw logs. Top-producing counties were Franklin, Fulton, Jackson, and White.

Illinois' 178 active sawmills received 146 million board feet of saw logs in 1983 compared with about 122 million board feet received at more than 300 mills in 1961. Imports of 9 million board feet came from five States—Wisconsin, Missouri, Indiana, Iowa, and Kentucky. Average lumber output per sawmill rose 112 percent between 1961 and 1983.

PULPWOOD

During 1983 Illinois produced 91 thousand cords of pulpwood, 8 thousand cords less than in 1961. Sixty-three out of every 100 cords were roundwood; the remainder was wood residue from sawmills and other mills. Residue has become an important pulpwood source since 1965. Softwoods have been a significant contributor to the roundwood pulpwood harvest since 1977, and shortleaf pine was the chief pulpwood species in 1983. Nearly three-fourths of the roundwood cut for pulpwood came from the Southern Unit.

Since 1961, Illinois annual pulpwood production has ranged from 146 thousand cords in 1973 to 76 thousand cords in 1982. All eight Illinois pulpmills active in 1961 have closed; the last mill closed in 1981. Illinois pulpwood is shipped to surrounding States.

VENEER LOGS

Illinois cut 4.0 million board feet of veneer logs, about one-third of the harvest in 1961. Illinois veneer log output has been in a down trend since at least 1961. White oak was the primary species harvested. Indiana was the major market for the logs. Only two veneer mills operated in Illinois during 1983.

FUELWOOD

Fuelwood production in 1983 was 1,690,000 cords; 1,633,000 cords were from roundwood and 57,000 cords were from primary wood-using mill residue used for industrial and domestic fuel. Of the fuel from roundwood, 81 percent was supplied by the Prairie Unit, 13 percent was supplied by the Claypan Unit, and 6 percent was supplied by the Southern Unit. Counties each producing more than 100,000 cords were Will, McHenry, and Cook.

Households cut almost all (1,626,000 cords) of the fuelwood from roundwood; commercial producers cut the remainder.

White oak and red oak, the primary fuelwood species, accounted for 53 percent of the roundwood fuel. Leading species cut were:

Species	Roundwood fuel production	
	(Thousand cords)	(Percent)
White oak	541	33
Red oak	325	20
Soft maple	141	9
Hickory	135	8
Elm	119	7
Ash	69	4

No other species supplied more than 32,000 cords. Softwoods (pine and redcedar) supplied less than 1 percent.

Most (97 percent) of the fuelwood cut came from private land. Public land supplied from 2 to 4 percent in each Unit:

Survey Unit	Private	Public
	(Thousand cords)	
Southern	85	4
Claypan	210	5
Prairie	1,288	41
All	1,583	50

Rural woodland furnished 46 out of every 100 cords of roundwood fuel. Of the other 54 cords out of 100 cut

from other land classes, 23 cords came from cities and villages; 21 cords came from fence rows, windbreaks, and rural yards; and 10 cords came from pasture and cropland.

All but a nominal amount of the primary wood-using mill residue used for fuel was hardwood. Two-thirds of the residue burned was coarse (chippable), and the remainder was fines (primarily sawdust and shavings).

Two residue user groups were identified—industrial and domestic. Domestic (household) customers used about two-thirds (39,000 cords) of the residue burned for fuel. Nineteen out of every twenty cords of residue burned by households was coarse residue. Domestic users prefer coarse residue because it is easier to handle and burns better than fines in most stoves and fireplaces. Industrial plants used 18,000 cords of which 91 percent was fines.

More detailed information on 1983 fuelwood production and sources in Illinois can be found in Resource Bulletin NC-92.

OTHER PRODUCTS

Other roundwood products (1.0 percent of all roundwood) cut in Illinois in 1983 included posts, handle bolts, cooperage logs, mine timbers, piling, and specialty products. Principal species harvested for these products were ash, white oak, and red oak. Harvesting of these products was widespread in 51 Illinois counties.

LOGGING RESIDUE

During the 1983 roundwood harvest, an estimated 22.4 million cubic feet of logging residue was generated. Logging residue includes all wood fiber left behind from trees cut during logging operations and not subsequently used. Total residue generated was equivalent to 284,000 cords of pulpwood, enough to supply a 525 ton/day pulpmill for 1 year. Alternatively, this volume of residue is equivalent to one-fifth of Illinois' fuelwood demand from roundwood in 1983.

Six species accounted for 88 percent of the residue:

Species	Residue volume	
	(Million cubic feet)	(Percent of total)
Red oak	10.3	46
White oak	3.9	17
Cottonwood	1.5	7
Ash	1.4	6
Soft maple	1.4	6
Hickory	1.2	6

Logging residue was widely distributed in every Survey Unit. Two counties—Franklin and Fulton—each produced more than 1 million cubic feet of residue.

PRIMARY MILL RESIDUE

In Illinois during 1983, primary wood-using mills generated 201,000 green tons of coarse residue, 121,000 green tons of fine residue, and 85,000 tons of bark. Much of this residue was used: 88 percent of the coarse, 86 percent of the fine, and 90 percent of the bark. Pulpmills consumed one-half of the coarse residue for fiber products, and industry, and households consumed 36 percent for fuel. Fine residue was used primarily for industrial fuel, soil conditioners, mulch, livestock bedding, and poultry litter.

Mills have found many additional markets for wood residue since 1961 and market demand has shifted. In 1961 only 65 percent of the coarse residue and 45 percent of the fine residue were used. Use of coarse residue has shifted from industrial fuel to fiber:

Type of use	Percent of coarse residue	
	1961	1983
Fiber (pulp)	1	50
Industrial fuel	27	2

In 1961 industrial fuel was the major use for fine residue; in 1983 the major use was for soil conditioners, mulch, livestock bedding, and poultry litter.

Counties each producing more than 12,000 green tons of coarse and fine residue in 1983 were Alexander, Crawford, Franklin, Gallatin, Richland, Tazewell, Union, Washington, and Wayne. Estimates of residue in 1983 by type of use for each county are found in the Appendix. Individuals or firms desiring residue can use the county data to pinpoint areas with the highest residue concentrations.

OUTLOOK

Growth of the U.S. economy, and particularly the economy of the Midwest, will be major factors in determining the rate of growth in demand for Illinois roundwood products. Changes in demand for housing, furniture, pallets, railroad ties, and blocking are all vitally important to Illinois' primary wood-using industry.

Between 1961 and 1983 the average annual changes in roundwood production for saw logs, pulpwood fuelwood, and all products were:

Product	Average annual change (Percent)
Saw logs	+1.4
Pulpwood	−2.2
Fuelwood	+15.1
All	+6.1

The 6.1 percent average annual increase for all roundwood products between 1961 and 1983 is not likely to be maintained during the next decade. Since 1973, fuelwood demand has increased at unsustainable rates and has caused the rate of increase for total products since 1961 to be abnormally high.

APPENDIX

STUDY METHODS

Except for data on posts and fuelwood cut from roundwood, data for this publication came from canvassing (with a formal questionnaire) all of the primary wood-using mills that use Illinois logs and bolts. The study was a cooperative effort between the Illinois Department of Conservation (IDC) and the North Central Forest Experiment Station (NCFES). IDC foresters personally canvassed all of the known Illinois primary mills. The IDC utilization and marketing specialist provided estimates based on prior knowledge and contacts for a few Illinois mills that did not furnish complete data.

The NCFES mailed a formal questionnaire to all out-of-State mills using Illinois roundwood. Follow-up on nonrespondents was by mail and telephone.

Using a formal questionnaire, forestry students at Southern Illinois University canvassed sample households and commercial fuelwood producers by telephone to obtain fuelwood and post data. Details concerning study methods are found in Resource Bulletin NC-92.

Logging utilization factors were used to estimate the logging residue. These factors were determined from an Illinois logging utilization study by the NCFES during 1984 and 1985.

The NCFES edited and compiled the data.

SAMPLING ERROR

Because all primary wood-using mills were canvassed, there is no sampling error for the roundwood products they used or the wood and bark residue they generated.

All the reported figures for fuelwood and posts are estimates based on sampling procedures designed to give accurate estimates of fuelwood production. A measure of reliability of these figures is given by sampling errors. This sampling error means that the chances are two out of three that the results for the sample differ by no more than the amount indicated from the results that would have been obtained if a 100 percent sample of all households and loggers had been made. Sampling error for fuelwood production was ±14.92 percent on a volume of 1,633,248 cords. Sampling error for post production was ±24.89 percent on a volume of 1,285,000 posts.

DEFINITION OF TERMS

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Generally, this includes areas suitable for growing crops of industrial wood in excess of 20 cubic feet per acre annually.

Consumption.—The quantity of a commodity, such as pulpwood, utilized.

County and municipal land.—Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants.

Forest Survey Unit.—A geographical area (group of counties) used by the Forest Inventory and Analysis Project to report periodic inventories and use of the Nation's forest resources.

Indian land.—All land held in trust by the United States for individual Indians or tribes, or all land, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Logging residue.—The unused portions of trees cut or killed by logging.

National forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (by-products) obtained incidental to production of principal products and wood materials not utilized for some product.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Roundwood production.—The quantity of roundwood harvested in a geographic area.

Roundwood products.—Saw logs, pulpwood, veneer logs, fuelwood, posts, cooperage logs, poles, piling, shaving bolts, charcoal bolts, and chips from roundwood.

Roundwood receipts.—The quantity of roundwood received in a geographic area regardless of the geographic source.

Rural woodland.—Wooded areas outside city and village limits excluding fence rows, windbreaks, rural yards, pasture, and cropland.

Standard cord.—A stack of wood bolts (or the equivalent) encompassing 128 cubic feet of wood, bark, and air space. A cord of pulpwood contains 79 cubic feet of wood and 49 cubic feet of bark and air space. A cord of fuelwood contains 70 cubic feet of wood and 58 cubic feet of bark and air space.

State land.—Land owned by States or land leased to these governmental units for 50 years or more.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED

SOFTWOODS
- Cypress ..... *Taxodium distichum*
- Shortleaf pine ..... *Pinus echinata*
- Red pine ..... *Pinus resinosa*
- Scotch pine ..... *Pinus sylvestris*
- Eastern white pine ..... *Pinus strobus*
- Eastern redcedar ..... *Juniperus virginiana*

HARDWOODS
- White oak
  - White oak ..... *Quercus alba*
  - Swamp white oak ..... *Quercus bicolor*
  - Bur oak ..... *Quercus macrocarpa*
  - Swamp chestnut oak ..... *Quercus michauxii*
  - Chinkapin oak ..... *Quercus muehlenbergii*
  - Overcup oak ..... *Quercus lyrata*
  - Post oak ..... *Quercus stellata*
- Red oak
  - Cherrybark oak ..... *Quercus falcata* var. *pagodaefolia*
  - Northern red oak ..... *Quercus rubra*
  - Shumard oak ..... *Quercus shumardii*
  - Scarlet oak ..... *Quercus coccinea*
  - Southern red oak ..... *Quercus falcata*
  - Shingle oak ..... *Quercus imbricaria*
  - Pin oak ..... *Quercus palustris*
  - Northern pin oak ..... *Quercus ellipsoidalis*
  - Black oak ..... *Quercus velutina*
- Hickory
  - Pecan ..... *Carya illinoensis*
  - Shellbark hickory ..... *Carya laciniosa*
  - Shagbark hickory ..... *Carya ovata*
  - Mockernut hickory ..... *Carya tomentosa*
  - Bitternut hickory ..... *Carya cordiformis*
  - Pignut hickory ..... *Carya glabra*
- American basswood ..... *Tilia americana*
- Beech ..... *Fagus grandifolia*
- Hard maple ..... *Acer saccharum*
- Soft maple
  - Red maple ..... *Acer rubrum*
  - Silver maple ..... *Acer saccharinum*
- Elm
  - Winged elm ..... *Ulmus alata*
  - American elm ..... *Ulmus americana*
  - Slippery elm ..... *Ulmus rubra*
- Ash
  - Black ash ..... *Fraxinus nigra*
  - White ash ..... *Fraxinus americana*
  - Green ash ..... *Fraxinus pennsylvanica*
- American sycamore ..... *Platanus occidentalis*
- Eastern cottonwood ..... *Populus deltoides*
- Sweetgum ..... *Liquidambar styraciflua*
- Blackgum ..... *Nyssa silvatica*
- Black cherry ..... *Prunus serotina*
- Black walnut ..... *Juglans nigra*
- Yellow-poplar ..... *Liriodendron tulipfera*
- Other hardwoods
  - Black willow ..... *Salix nigra*
  - Hackberry ..... *Celtis occidentalis*
  - Bigtooth aspen ..... *Populus grandidentata*
  - Quaking aspen ..... *Populus tremuloides*
  - River birch ..... *Betula nigra*
  - Water tupelo ..... *Nyssa aquatica*
  - Butternut ..... *Juglans cinerea*
  - Boxelder ..... *Acer negundo*
  - Ohio buckeye ..... *Aesculus glabra*
  - Northern catalpa ..... *Catalpa speciosa*
  - Persimmon ..... *Diospyros virginiana*
  - Kentucky coffeetree ..... *Gymnocladus dioicus*
  - Cucumbertree ..... *Magnolia acuminata*
  - Flowering dogwood ..... *Cornus florida*
  - Honeylocust ..... *Gleditsia triacanthos*
  - Black locust ..... *Robinia pseudoacacia*
  - Sassafras ..... *Sassafras albidum*

TABLE TITLES

Table 1. —Number of active primary wood-using mills by Forest Survey Unit in Illinois, 1961 and 1983

Table 2. —Output of roundwood products by species group, Illinois, 1961 and 1983

Table 3. —Output of roundwood products by species group and type of product, Illinois, 1983

Table 4. —Output of roundwood products by ownership class, Forest Survey Unit, and species group, Illinois, 1983

Table 5. —Output of roundwood products by Forest Survey Unit, county, and species group, Illinois, 1983

Table 6. —Saw log production by species group in Illinois, 1961 and 1983

Table 7. —Saw log production by Forest Survey Unit, species group, and State of destination, Illinois, 1983

Table 8. —Saw log production by Forest Survey Unit, county, and species group, Illinois, 1983

Table 9. —Saw log receipts in Illinois by Forest Survey Unit, species group, and area of origin, 1983

Table 10.—Pulpwood production in Illinois by species group, 1965, 1970, 1975, 1980, and 1983

Table 11.—Pulpwood production by species group and Forest Survey Unit, Illinois, 1983

Table 12.—Veneer log production by species group, Illinois, 1966, 1970, 1976, and 1983

Table 13.—Veneer log and bolt production by species group and State or country of destination, Illinois, 1983 RB-100-23

Table 14.—Veneer log production by Forest Survey Unit, county, and species group, Illinois, 1983

Table 15.—Fuelwood production from roundwood by species group, Forest Survey Unit, and county, Illinois, 1983

Table 16.—Production of posts, handle bolts, mine timbers, and miscellaneous products[1] by Forest Survey Unit, county, and species group, Illinois, 1983

Table 17.—Logging residue generated during roundwood production by species group, Forest Survey Unit, and county, Illinois, 1983

Table 18.—Residue produced at primary wood-using mills by type of material, type of use, and county, Illinois, 1983

Table 1.--Number of active primary wood-using mills by Forest Survey Unit in Illinois, 1961 and 1983

Kind of mill	All Units		Southern Unit		Claypan Unit		Prairie Unit	
	1961	1983	1961	1983	1961	1983	1961	1983
Saw mills								
Large[1]	2	14	--	6	--	3	2	5
Medium[2]	37	27	11	4	13	15	13	8
Small[3]	275	137	56	23	107	53	112	61
Subtotal	314	178	67	33	120	71	127	74
Pulpmills	8	--	--	--	3	--	5	--
Veneer mills	8	2	5	1	1	--	2	1
Other mills[4]	25	5	8	2	7	3	10	--
All mills	355	185	80	36	131	74	144	75

[1] Annual lumber production of 3 million board feet or more.

[2] Annual lumber production from 1.000 to 2.999 million board feet.

[3] Annual lumber production less than 1 million board feet.

[4] Includes cooperage mills, handle mills, and charcoal plants.

Table 2.--Output of roundwood products by species group and product, Illinois, 1961 and 1983

(In million cubic feet)

Product	All species		Softwoods		Hardwoods	
	1961	1983	1961	1983	1961	1983
Saw logs	19.9	26.7	0.1	0.1	19.8	26.6
Fuelwood	5.2	114.1	--	0.5	5.2	113.6
Pulpwood	7.4	4.5	0.5	1.4	6.9	3.1
Veneer logs	1.7	0.5	--	--	1.7	0.5
Posts	0.3	0.7	--	1/	0.3	0.7
Other products[2]	5.6	0.7	1/	--	5.6	0.7
All products	40.1	147.2	0.6	2.0	39.5	145.2

[1] Less than 50 thousand cubic feet.

[2] Includes logs and bolts used for handles, mine timbers, cooperage, piling and other specialty products.

Table 3.--Output of roundwood products by species group and type of product, Illinois, 1983

Species group	All products	Saw logs		Veneer logs		Pulpwood		Fuelwood		Posts		Other products[1]
	MCF[2]	MBF[3]	MCF[2]	MBF[3]	MCF[2]	Cords[4]	MCF[2]	Cords[4]	MCF[2]	M pieces[5]	MCF[2]	MCF[2]
Softwoods												
Cypress	34	192	34	--	--	--	--	--	--	--	--	--
Shortleaf pine	1,414	--	--	--	--	17,899	1,412	33	2	--	--	--
Other pine	430	117	21	--	--	302	23	5,521	386	--	--	--
Redcedar	143	21	4	--	--	--	--	1,455	103	47	36	--
Other softwoods	3	14	3	--	--	--	--	--	--	--	--	--
Total	2,024	344	62	--	--	18,201	1,435	7,009	491	47	36	--
Hardwoods												
Ash	6,603	7,280	1,178	18	2	3,296	256	68,534	4,766	--	--	401
Basswood	168	645	101	--	--	--	--	963	67	--	--	--
Beech	108	674	108	--	--	--	--	--	--	--	--	--
Blackgum	102	415	66	--	--	416	33	48	3	--	--	--
Black cherry	2,280	868	130	--	--	--	--	30,851	2,150	--	--	--
Cottonwood	5,072	13,726	2,118	7	1	8,982	705	32,179	2,248	--	--	--
Elm	8,807	2,584	412	3	--	1,138	90	118,787	8,304	2	1	--
Pecan	3,431	1,326	210	85	11	2,534	191	43,335	3,007	19	11	1
Other hickory	7,646	6,844	1,111	--	--	1,407	106	91,398	6,372	48	29	28
Hard maple	2,075	3,261	547	--	--	832	60	21,284	1,468	--	--	--
Soft maple	11,870	9,678	1,641	--	--	5,135	410	140,541	9,819	--	--	--
Red oak	35,872	73,503	12,426	540	73	5,759	448	325,349	22,755	72	41	129
White oak	43,398	26,916	4,545	2,555	346	5,358	420	541,069	37,844	141	77	166
Sweetgum	622	2,946	481	--	--	1,758	135	88	6	--	--	--
Sycamore	1,365	2,998	481	--	--	2,079	162	10,325	722	--	--	--
Black walnut	1,963	2,954	439	760	99	--	--	20,464	1,422	6	3	--
Yellow-poplar	442	2,649	430	2	--	127	10	22	2	--	--	--
Other hardwoods	13,342	932	146	--	--	--	--	181,002	12,651	950	545	--
Total	145,166	160,199	26,570	3,970	532	38,821	3,026	1,626,239	113,606	1,238	707	725
All species	147,190	160,543	26,632	3,970	532	57,022	4,461	1,633,248	114,097	1,285	743	725

[1] Includes logs and bolts used for handles, mine timbers, cooperage, piling, and other specialty products.

[2] Thousand cubic feet.

[3] Thousand board feet, International 1/4-inch rule.

[4] Standard cord contains 128 cubic feet including wood, bark, and air space.

[5] Thousand pieces.

Table 4.--Output of roundwood products by ownership class, Forest Survey Unit, and species group, Illinois, 1983

(In thousand cubic feet)

Ownership class and species group	All Units	Forest Survey Unit		
		Southern Unit	Claypan Unit	Prairie Unit
Federal				
National Forest				
Softwoods	1,140	1,140	--	--
Hardwoods	905	905	--	--
Total	2,045	2,045	--	--
Other				
Softwoods	18	--	--	18
Hardwoods	404	79	5	320
Total	422	79	5	338
State				
Softwoods	70	9	--	61
Hardwoods	162	17	52	93
Total	232	26	52	154
County & municipal				
Softwoods	8	--	--	8
Hardwoods	2,762	81	299	2,382
Total	2,770	81	299	2,390
Private				
Forest Industry				
Softwoods	16	--	--	16
Hardwoods	389	140	204	45
Total	405	140	204	61
Other				
Softwoods	772	320	71	381
Hardwoods	140,544	16,822	25,730	97,992
Total	141,316	17,142	25,801	98,373
All owners				
Softwoods	2,024	1,469	71	484
Hardwoods	145,166	18,044	26,290	100,832
Total	147,190	19,513	26,361	101,316

Table 5.--Output of roundwood products by Forest Survey Unit, county, and species group, Illinois, 1983

(In thousand cubic feet)

Unit and county	All species	Species group											
		Cypress	Short-leaf pine	Other pine	Red-cedar	Other soft-woods	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm
Southern Unit													
Alexander	1,459	7	--	--	--	--	140	--	20	22	3	82	33
Franklin	2,111	1	--	--	--	--	32	--	2	1	--	59	51
Gallatin	490	1	--	--	--	--	63	--	--	3	--	44	12
Hamilton	939	--	--	--	--	--	96	--	--	1	--	14	10
Hardin	876	--	108	--	1	--	21	--	5	3	2	13	5
Jackson	1,639	--	--	--	--	--	63	1	1	2	--	13	43
Johnson	1,088	7	8	--	--	--	117	1	19	15	3	34	24
Massac	393	3	--	--	--	--	31	--	10	4	2	12	8
Perry	731	--	--	--	--	--	15	--	--	1	6	4	15
Pope	1,812	2	864	--	--	--	123	--	8	6	2	20	5
Pulaski	1,512	2	--	--	--	--	230	--	5	12	45	39	36
Randolph	1,403	--	--	--	1	--	241	--	--	1	11	41	64
Saline	934	2	326	--	--	--	43	--	4	2	15	20	2
Union	1,813	7	--	--	19	--	185	--	21	12	4	64	71
White	1,216	--	--	--	--	--	68	--	4	6	2	286	3
Williamson	1,097	2	108	--	--	--	168	--	6	2	56	9	21
Total	19,513	34	1,414	--	21	--	1,636	2	105	93	151	754	403
Claypan Unit													
Bond	612	--	--	--	--	--	110	16	--	--	24	35	8
Calhoun	611	--	--	--	--	--	35	1	--	--	1	64	18
Clark	1,886	--	--	--	--	--	300	2	1	--	52	52	11
Clay	760	--	--	2	--	--	75	--	--	--	--	28	--
Clinton	1,017	--	--	--	--	--	233	1	--	--	6	11	2
Crawford	2,006	--	--	--	--	--	246	--	--	--	46	63	36
Cumberland	724	--	--	--	--	--	61	--	--	--	61	15	26
Edwards	519	--	--	--	--	--	25	--	--	--	--	6	--
Effingham	651	--	--	--	1	--	79	2	--	--	2	65	1
Fayette	1,069	--	--	--	--	--	13	--	--	--	--	97	8
Greene	981	--	--	--	--	--	53	1	--	--	9	18	67
Jasper	733	--	--	--	--	--	32	--	--	--	--	98	25
Jefferson	714	--	--	--	--	--	12	--	--	--	8	7	5
Jersey	1,266	--	--	--	--	--	102	4	--	--	1	13	56
Lawrence	850	--	--	--	--	--	122	--	--	--	--	57	--
Macoupin	770	--	--	--	--	--	20	--	--	--	29	2	32
Madison	1,852	--	--	49	1	--	237	1	--	--	30	69	137
Marion	1,124	--	--	--	--	--	85	1	--	--	--	35	9
Monroe	686	--	--	--	--	--	16	--	--	--	9	34	16
Montgomery	606	--	--	--	--	--	2	--	--	--	10	10	--
Richland	712	--	--	--	--	--	81	--	--	--	--	62	--
St. Clair	1,508	--	--	17	--	--	118	--	--	--	--	50	94
Shelby	851	--	--	--	--	--	21	--	--	--	10	72	36
Wabash	632	--	--	--	1	--	11	--	--	--	9	42	14
Washington	1,465	--	--	--	--	--	28	--	--	--	21	18	135
Wayne	1,756	--	--	--	--	--	136	--	2	6	12	111	16
Total	26,361	--	--	68	3	--	2,253	29	3	6	340	1,134	752

(Table 5 continued on next page)

(Table 5 continued)

Unit and county	Species group										
	Pecan hickory	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Southern Unit											
Alexander	61	62	26	135	397	249	100	66	1	47	8
Franklin	15	80	2	82	1,391	218	80	3	41	4	49
Gallatin	27	10	11	23	228	33	10	4	1	15	5
Hamilton	52	109	13	77	428	127	6	4	--	2	--
Hardin	7	54	9	13	429	171	7	9	--	19	--
Jackson	37	97	7	90	958	265	11	14	3	7	27
Johnson	20	59	9	46	409	189	55	21	1	46	5
Massac	9	17	2	23	164	55	25	4	--	23	1
Perry	20	39	2	10	427	170	5	9	2	--	6
Pope	15	44	3	29	416	204	15	14	1	27	14
Pulaski	117	156	15	83	409	255	50	41	--	14	3
Randolph	96	142	29	135	367	224	5	21	2	4	19
Saline	2	10	1	18	311	80	15	23	--	10	50
Union	70	101	16	70	633	337	63	31	3	49	57
White	28	56	7	170	372	120	36	22	2	34	--
Williamson	17	37	18	80	341	166	16	6	2	16	26
Total	593	1,073	170	1,084	7,680	2,863	499	292	59	317	270
Claypan Unit											
Bond	23	37	2	31	177	110	--	1	1	--	37
Calhoun	14	10	12	23	212	159	--	42	10	--	10
Clark	66	93	27	107	376	322	6	27	20	48	376
Clay	13	49	1	38	300	241	--	13	--	--	--
Clinton	4	86	42	23	351	196	--	--	1	--	61
Crawford	63	94	7	80	762	411	31	36	5	--	126
Cumberland	36	58	25	58	164	158	1	7	10	7	37
Edwards	16	57	12	66	168	88	1	4	30	3	43
Effingham	32	71	12	27	167	99	--	9	3	--	81
Fayette	49	105	2	50	477	244	5	10	8	--	1
Greene	76	116	11	59	213	241	--	6	6	--	105
Jasper	23	45	5	72	300	87	18	28	--	--	--
Jefferson	16	34	4	27	404	169	3	3	--	--	22
Jersey	28	44	52	166	382	330	--	8	7	--	73
Lawrence	10	22	--	55	393	58	37	43	3	--	50
Macoupin	18	31	8	42	214	217	--	1	11	--	145
Madison	20	39	53	256	319	342	--	64	14	--	221
Marion	106	215	44	110	336	176	--	1	1	--	5
Monroe	44	65	16	71	212	177	--	12	7	--	7
Montgomery	5	10	3	18	105	206	--	2	3	--	232
Richland	17	80	--	72	249	128	--	19	2	2	--
St. Clair	119	218	32	46	369	306	--	57	20	--	62
Shelby	46	77	15	85	250	196	--	7	3	--	33
Wabash	82	127	16	86	121	92	2	9	1	--	19
Washington	107	243	38	6	463	341	--	21	--	--	44
Wayne	48	125	3	107	803	311	19	18	1	17	21
Total	1,081	2,151	442	1,781	8,287	5,405	123	448	167	77	1,811

(Table 5 continued on next page)

(Table 5 continued)

Unit and county	All species	Species group											
		Cypress	Short-leaf pine	Other pine	Red-cedar	Other soft-woods	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm
Prairie Unit													
Adams	1,553	--	--	26	12	--	26	2	--	--	14	9	161
Boone	350	--	--	--	--	--	17	--	--	--	7	1	51
Brown	487	--	--	--	--	--	17	4	--	--	7	20	5
Bureau	393	--	--	--	--	--	5	1	--	--	7	12	11
Carroll	398	--	--	1	--	--	14	2	--	--	20	22	6
Cass	236	--	--	--	--	--	1	1	--	--	--	10	2
Champaign	697	--	--	7	2	--	17	4	--	--	16	73	110
Christian	403	--	--	--	--	--	--	--	--	--	--	1	--
Coles	379	--	--	--	--	--	4	1	--	--	6	2	2
Cook	11,034	--	--	106	--	--	163	32	--	--	239	580	713
De Kalb	431	--	--	--	--	--	7	1	--	--	18	1	6
Dewitt	90	--	--	--	--	--	--	--	--	--	--	--	--
Douglas	121	--	--	--	--	--	9	--	--	--	--	2	1
Dupage	2,045	--	--	--	--	--	484	--	--	--	--	--	778
Edgar	494	--	--	--	--	--	8	1	--	--	16	84	5
Ford	84	--	--	--	--	--	1	--	--	--	--	--	--
Fulton	2,555	--	--	--	--	--	83	24	--	--	23	364	135
Grundy	1,311	--	--	--	--	--	178	--	--	--	7	21	32
Hancock	2,048	--	--	--	--	--	158	2	--	--	36	187	48
Henderson	597	--	--	--	--	--	11	2	--	--	48	198	48
Henry	1,467	--	--	--	--	2	10	1	--	--	17	1	448
Iroquois	1,675	--	--	3	--	--	83	--	--	--	--	307	--
Jo Daviess	2,116	--	--	1	--	--	125	6	--	--	18	22	446
Kane	1,376	--	--	--	--	--	--	--	--	--	--	--	413
Kankakee	1,486	--	--	--	--	--	37	--	--	--	25	24	302
Kendall	3,277	--	--	--	45	--	109	--	--	--	--	--	8
Knox	492	--	--	3	--	--	3	1	--	--	16	--	96
Lake	5,845	--	--	1	--	--	1	--	--	--	97	2	22
La Salle	1,256	--	--	6	--	--	9	1	--	--	16	86	250
Lee	656	--	--	2	--	--	--	--	--	--	44	29	14
Livingston	575	--	--	21	--	--	19	--	--	--	--	--	30
Logan	180	--	--	--	--	--	1	1	--	--	--	4	29
Macon	640	--	--	8	--	--	18	--	--	--	20	204	67
Marshall	301	--	--	--	--	--	20	--	--	--	--	--	--
Mason	299	--	--	--	18	--	14	1	--	--	--	4	--
McDonough	884	--	--	--	--	--	2	1	--	--	1	67	37
McHenry	14,583	--	--	--	--	--	59	--	--	--	186	182	756
McLean	990	--	--	--	18	--	49	--	--	--	14	46	22
Menard	206	--	--	--	--	--	1	1	--	--	25	4	16
Mercer	215	--	--	--	--	--	2	--	--	--	5	7	--
Morgan	544	--	--	--	--	--	7	--	--	--	2	18	68
Moultrie	139	--	--	--	--	--	--	--	--	--	--	--	8
Ogle	1,025	--	--	16	24	--	3	8	--	--	37	10	9
Peoria	1,693	--	--	23	--	--	5	1	--	--	12	67	277
Piatt	244	--	--	--	--	--	--	--	--	--	--	4	44
Pike	1,285	--	--	--	--	--	10	5	--	--	2	2	140
Putnam	411	--	--	--	--	--	7	1	--	--	--	--	--
Rock Island	773	--	--	19	--	--	3	1	--	--	23	4	17
Sangamon	770	--	--	1	--	--	--	--	--	2	102	3	121
Schuyler	608	--	--	--	--	--	7	7	--	--	3	41	18
Scott	312	--	--	--	--	--	--	--	--	--	11	27	15
Stark	55	--	--	--	--	--	--	--	--	--	--	--	16
Stephenson	435	--	--	--	--	1	1	1	--	--	35	--	201
Tazewell	1,798	--	--	12	--	--	182	1	--	--	6	39	190
Vermillion	3,858	--	--	7	--	--	112	2	--	--	57	72	28
Warren	457	--	--	--	--	--	--	--	--	--	7	4	--
Whiteside	359	--	--	10	--	--	2	1	--	--	4	15	27
Will	17,293	--	--	8	--	--	194	5	--	--	339	136	904
Winnebago	2,992	--	--	73	--	--	54	13	--	1	190	158	444
Woodford	2,040	--	--	8	--	--	362	1	--	--	11	8	55
Total	101,316	--	--	362	119	3	2,714	137	--	3	1,789	3,184	7,652
State total	147,190	34	1,414	430	143	3	6,603	168	108	102	2,280	5,072	8,807

(Table 5 continued on next page

(Table 5 continued)

Unit and county	Species group										
	Pecan hickory	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Prairie Unit											
Adams	36	81	5	78	329	536	--	2	28	--	208
Boone	15	39	3	20	61	120	--	--	16	--	--
Brown	3	12	25	39	216	116	--	2	11	--	10
Bureau	1	3	2	53	70	135	--	--	14	--	79
Carroll	1	5	2	12	135	147	--	--	15	--	16
Cass	--	1	2	4	96	105	--	1	1	--	12
Champaign	4	1	9	54	36	57	--	36	38	--	233
Christian	2	4	1	4	60	151	--	1	88	--	91
Coles	12	25	7	43	74	128	--	3	9	8	55
Cook	392	1,008	291	2,134	1,743	3,381	--	1	50	--	201
De Kalb	13	33	3	31	101	192	--	--	4	--	21
Dewitt	--	--	9	64	3	6	--	--	--	--	8
Douglas	5	11	2	6	15	20	--	3	1	4	42
Dupage	--	--	7	54	245	477	--	--	--	--	--
Edgar	6	3	21	120	46	51	--	10	48	15	60
Ford	7	23	1	7	15	30	--	--	--	--	--
Fulton	29	45	74	175	808	539	--	2	62	--	192
Grundy	48	124	10	68	122	241	--	--	--	--	460
Hancock	71	163	11	109	321	618	--	--	7	--	317
Henderson	23	21	3	33	58	112	--	--	5	--	35
Henry	--	--	11	78	246	480	--	--	28	--	145
Iroquois	26	69	22	158	235	343	--	--	16	--	413
Jo Daviess	10	26	58	403	338	533	--	--	35	--	95
Kane	6	17	6	45	244	474	--	--	1	--	170
Kankakee	13	35	32	242	247	475	--	--	--	--	54
Kendall	144	371	23	172	655	1,273	--	--	286	--	191
Knox	4	14	8	17	104	151	--	--	56	--	19
Lake	12	31	21	154	1,727	3,352	--	--	--	--	425
La Salle	1	2	22	171	112	187	--	1	11	--	381
Lee	3	10	3	25	121	231	--	--	--	--	174
Livingston	--	1	1	12	51	98	--	--	3	--	339
Logan	3	9	7	46	22	32	--	--	1	--	25
Macon	6	17	8	63	50	89	--	7	5	--	78
Marshall	--	--	34	15	115	101	--	--	7	--	9
Mason	18	47	1	2	61	108	--	--	4	--	21
McDonough	26	73	20	26	121	157	--	8	8	--	337
McHenry	91	232	45	327	4,177	8,046	--	--	--	--	482
McLean	19	49	8	67	101	198	--	17	24	1	357
Menard	--	1	3	16	24	32	--	--	5	--	78
Mercer	5	13	2	21	9	56	--	--	80	--	15
Morgan	11	40	26	107	133	93	--	4	9	--	26
Moultrie	--	--	--	--	10	20	--	--	--	--	101
Ogle	40	103	--	3	209	326	--	--	4	--	233
Peoria	18	31	47	173	354	633	--	--	11	--	41
Piatt	8	23	2	22	20	39	--	--	20	--	62
Pike	3	14	25	11	493	530	--	1	21	--	28
Putnam	--	--	15	14	67	301	--	--	6	--	--
Rock Island	2	5	12	94	132	229	--	--	38	--	194
Sangamon	3	9	9	69	76	150	--	--	37	--	188
Schuyler	4	15	44	47	291	114	--	4	13	--	--
Scott	--	1	1	1	106	133	--	1	16	--	--
Stark	--	--	--	--	10	25	--	--	2	--	2
Stephenson	1	2	5	39	44	86	--	--	1	--	18
Tazewell	48	123	18	119	231	418	--	--	89	--	322
Vermillion	250	630	42	296	384	709	--	431	361	20	457
Warren	42	103	2	22	48	90	--	--	50	--	89
Whiteside	--	1	--	12	84	155	--	--	2	--	46
Will	136	349	353	2,587	3,018	5,855	--	90	--	--	3,319
Winnebago	44	113	24	194	478	938	--	--	36	--	232
Woodford	92	241	15	27	403	708	--	--	54	--	55
Total	1,757	4,422	1,463	9,005	19,905	35,130	--	625	1,737	48	11,261
State total	3,431	7,646	2,075	11,870	35,872	43,398	622	1,365	1,963	442	13,342

Table 6.--Saw-log production by species group in Illinois, 1961 and 1983

(In thousand board feet)[1/]

Species group	1961	1983	Change
Softwoods			
Cypress	342	192	-150
Shortleaf pine	94	--	-94
Other pine	56	117	61
Redcedar	3	21	18
Other softwoods	--	14	14
Total	495	344	-151
Hardwoods			
Ash	2,845	7,280	4,435
Basswood	638	645	7
Beech	253	674	421
Blackgum	368	415	47
Cottonwood	15,988	13,726	-2,262
Elm	10,430	2,584	-7,846
Hickory	1,793	8,170	6,377
Hard maple	2,736	3,261	525
Soft maple	19,099	9,678	-9,421
Red oak	41,853	73,503	31,650
White oak	19,189	26,916	7,727
Sweetgum	2,921	2,946	25
Sycamore	5,261	2,998	-2,263
Black walnut	2,969	2,954	-15
Yellow-poplar	1,603	2,649	1,046
Other hardwoods	2,467	1,800	-667
Total	130,413	160,199	29,786
All species	130,908	160,543	29,635

[1/] International 1/4-inch rule.

Table 7.--Saw log production by Forest Survey Unit, species group, and State of destination, Illinois, 1983

(In thousand board feet)[1/]

Species group	All states	State of destination				
		Illinois	Missouri	Indiana	Iowa	Other states
ALL UNITS						
Softwoods						
Cypress	192	192	--	--	--	--
Shortleaf pine	--	--	--	--	--	--
Other pine	117	117	--	--	--	--
Redcedar	21	21	--	--	--	--
Other softwoods	14	14	--	--	--	--
Total	344	344	--	--	--	--
Hardwoods						
Ash	7,280	5,776	742	688	42	32
Basswood	645	558	21	37	29	--
Beech	674	642	10	20	--	2
Blackgum	415	314	50	49	--	2
Black cherry	868	782	--	85	1	--
Cottonwood	13,726	12,598	751	331	29	17
Elm	2,584	1,663	739	167	3	12
Pecan hickory	1,326	113	704	477	--	32
Other hickory	6,844	6,110	461	232	20	21
Hard maple	3,261	2,840	162	244	8	7
Soft maple	9,678	7,568	700	859	525	26
Red oak	73,503	67,373	3,681	2,167	177	105
White oak	26,916	21,329	3,580	1,600	312	95
Sweetgum	2,946	2,610	205	117	--	14
Sycamore	2,998	2,383	305	297	--	13
Black walnut	2,954	2,530	171	233	15	5
Yellow-poplar	2,649	1,833	121	687	--	8
Other hardwoods	932	314	572	--	22	24
Total	160,199	137,336	12,975	8,290	1,183	415
All species	160,543	137,680	12,975	8,290	1,183	415
SOUTHERN UNIT						
Softwoods						
Cypress	192	192	--	--	--	--
Shortleaf pine	--	--	--	--	--	--
Other pine	--	--	--	--	--	--
Redcedar	9	9	--	--	--	--
Other softwoods	--	--	--	--	--	--
Total	201	201	--	--	--	--
Hardwoods						
Ash	2,671	2,065	456	118	--	32
Basswood	18	4	14	--	--	--
Beech	656	630	10	14	--	2
Blackgum	370	269	50	49	--	2
Black cherry	130	123	--	7	--	--
Cottonwood	4,308	3,566	515	210	--	17
Elm	1,164	650	468	34	--	12
Pecan hickory	629	27	466	104	--	32
Other hickory	2,641	2,299	307	14	--	21
Hard maple	372	206	103	56	--	7
Soft maple	3,016	2,173	396	421	--	26
Red oak	28,969	26,443	1,911	510	--	105
White oak	6,601	4,091	2,310	105	--	95
Sweetgum	2,190	1,902	205	69	--	14
Sycamore	781	533	186	49	--	13
Black walnut	106	23	71	7	--	5
Yellow-poplar	1,891	1,678	121	84	--	8
Other hardwoods	441	50	367	--	--	24
Total	56,954	46,732	7,956	1,851	--	415
All species	57,155	46,933	7,956	1,851	--	415

(Table 7 continued on next page)

[1/] International 1/4-inch rule.

(Table 7 continued)

CLAYPAN UNIT

Species group	All states	State of destination: Illinois	Missouri	Indiana	Iowa	Other states
Softwoods						
Cypress	--	--	--	--	--	--
Shortleaf pine	--	--	--	--	--	--
Other pine	--	--	--	--	--	--
Redcedar	8	8	--	--	--	--
Other softwoods	--	--	--	--	--	--
Total	8	8	--	--	--	--
Hardwoods						
Ash	3,167	2,474	284	409	--	--
Basswood	87	77	7	3	--	--
Beech	18	12	--	6	--	--
Blackgum	40	40	--	--	--	--
Black cherry	121	82	--	39	--	--
Cottonwood	5,984	5,685	235	64	--	--
Elm	607	299	269	39	--	--
Pecan hickory	592	83	236	273	--	--
Other hickory	3,732	3,401	154	177	--	--
Hard maple	1,295	1,146	56	93	--	--
Soft maple	4,274	3,614	300	360	--	--
Red oak	28,501	25,883	1,437	1,181	--	--
White oak	10,637	8,261	1,196	1,180	--	--
Sweetgum	755	707	--	48	--	--
Sycamore	1,945	1,663	117	165	--	--
Black walnut	480	326	43	111	--	--
Yellow-poplar	474	155	--	319	--	--
Other hardwoods	265	60	205	--	--	--
Total	62,974	53,968	4,539	4,467	--	--
All species	62,982	53,976	4,539	4,467	--	--

PRAIRIE UNIT

Species group	All states	State of destination: Illinois	Missouri	Indiana	Iowa	Other states
Softwoods						
Cypress	--	--	--	--	--	--
Shortleaf pine	--	--	--	--	--	--
Other pine	117	117	--	--	--	--
Redcedar	4	4	--	--	--	--
Other softwoods	14	14	--	--	--	--
Total	135	135	--	--	--	--
Hardwoods						
Ash	1,442	1,237	2	161	42	--
Basswood	540	477	--	34	29	--
Beech	--	--	--	--	--	--
Blackgum	5	5	--	--	--	--
Black cherry	617	577	--	39	1	--
Cottonwood	3,434	3,347	1	57	29	--
Elm	813	714	2	94	3	--
Pecan hickory	105	3	2	100	--	--
Other hickory	471	410	--	41	20	--
Hard maple	1,594	1,488	3	95	8	--
Soft maple	2,388	1,781	4	78	525	--
Red oak	16,033	15,047	333	476	177	--
White oak	9,678	8,977	74	315	312	--
Sweetgum	1	1	--	--	--	--
Sycamore	272	187	2	83	--	--
Black walnut	2,368	2,181	57	115	15	--
Yellow-poplar	284	--	--	284	--	--
Other hardwoods	226	204	--	--	22	--
Total	40,271	36,636	480	1,972	1,183	--
All species	40,406	36,771	480	1,972	1,183	--

Table 8.--Saw log production by Forest Survey Unit, county and species group, Illinois, 1983

(In thousand board feet)[1/]

Unit and county	All species	Species group											
		Cypress	Short-leaf pine	Other pine	Red-cedar	Other soft-woods	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm
Southern Unit													
Alexander	3,807	39	--	--	--	--	279	2	119	51	17	278	117
Franklin	9,251	4	--	--	--	--	147	1	12	6	1	377	254
Gallatin	2,316	6	--	--	--	--	38	--	3	18	--	287	22
Hamilton	2,016	--	--	--	--	--	12	--	1	8	--	93	7
Hardin	2,655	--	--	--	3	--	62	--	31	17	13	85	34
Jackson	6,630	--	--	--	--	--	233	4	7	12	3	88	155
Johnson	4,381	42	--	--	--	--	250	4	118	70	21	169	124
Massac	1,962	19	--	--	--	--	121	--	63	20	12	81	39
Perry	2,026	--	--	--	--	--	74	1	--	5	4	27	53
Pope	2,981	13	--	--	--	--	98	1	51	36	13	131	34
Pulaski	1,003	10	--	--	--	--	62	--	30	10	5	82	20
Randolph	2,325	--	--	--	6	--	127	2	--	7	1	268	80
Saline	2,288	10	--	--	--	--	79	--	27	11	1	127	11
Union	4,636	39	--	--	--	--	292	2	131	46	24	318	139
White	6,410	--	--	--	--	--	175	--	25	40	7	1,843	21
Williamson	2,468	10	--	--	--	--	622	1	38	13	8	54	54
Total	57,155	192	--	--	9	--	2,671	18	656	370	130	4,308	1,164
Claypan Unit													
Bond	751	--	--	--	--	--	12	--	--	--	--	230	--
Calhoun	3,175	--	--	--	--	--	113	5	--	--	9	414	81
Clark	3,255	--	--	--	1	--	264	11	6	--	40	190	38
Clay	3,040	--	--	--	--	--	130	1	--	--	--	186	--
Clinton	3,605	--	--	--	--	--	434	8	--	--	1	75	--
Crawford	3,769	--	--	--	--	--	92	--	--	--	1	404	17
Cumberland	1,474	--	--	--	--	--	78	1	--	--	26	62	6
Edwards	1,380	--	--	--	--	--	113	--	1	1	--	41	--
Effingham	1,755	--	--	--	4	--	68	11	--	--	12	410	--
Fayette	3,077	--	--	--	--	--	80	1	--	--	1	625	52
Greene	1,378	--	--	--	--	--	70	9	--	--	--	118	63
Jasper	2,950	--	--	--	--	--	143	--	--	--	3	480	--
Jefferson	2,526	--	--	--	--	--	5	--	--	--	3	46	--
Jersey	2,660	--	--	--	--	--	183	24	--	--	4	84	88
Lawrence	3,903	--	--	--	--	--	55	--	--	--	--	365	3
Macoupin	2,101	--	--	--	--	--	47	2	--	--	2	14	7
Madison	918	--	--	--	--	--	54	4	--	--	--	24	23
Marion	2,948	--	--	--	--	--	252	4	--	--	3	229	--
Monroe	2,089	--	--	--	--	--	99	2	--	--	--	220	66
Montgomery	464	--	--	--	--	--	14	1	--	--	1	63	--
Richland	3,135	--	--	--	--	--	299	--	--	--	--	400	--
St. Clair	1,508	--	--	--	--	--	175	1	--	--	1	24	2
Shelby	1,107	--	--	--	--	--	53	2	--	--	1	174	--
Wabash	932	--	--	--	3	--	48	--	--	--	6	272	18
Washington	3,165	--	--	--	--	--	170	--	--	--	--	117	115
Wayne	5,917	--	--	--	--	--	116	--	11	39	7	717	28
Total	62,982	--	--	--	8	--	3,167	87	18	40	121	5,984	607

(Table 8 continued on next page)

[1/] International 1/4-inch rule.

(Table 8 continued)

Unit and county	Species group										
	Pecan hickory	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Southern Unit											
Alexander	68	129	34	76	1,391	580	247	60	11	256	53
Franklin	25	385	8	434	6,630	414	487	18	4	25	19
Gallatin	56	45	65	134	1,315	140	63	25	7	92	--
Hamilton	--	164	1	102	1,455	102	37	23	--	11	--
Hardin	21	319	53	76	1,378	347	42	56	--	118	--
Jackson	126	437	28	469	4,045	667	70	81	19	48	138
Johnson	35	250	27	111	1,860	671	257	54	7	277	34
Massac	10	57	13	124	850	266	115	28	1	136	7
Perry	48	106	11	55	1,257	274	35	25	13	--	38
Pope	15	109	21	176	1,320	626	88	83	--	166	--
Pulaski	7	28	5	10	429	155	58	14	1	71	6
Randolph	87	174	16	79	741	542	32	62	12	25	64
Saline	--	54	4	73	1,505	228	83	11	--	64	--
Union	73	148	36	81	1,870	731	267	76	11	294	58
White	28	141	39	967	1,983	557	224	135	15	210	--
Williamson	30	95	11	49	940	301	85	30	5	98	24
Total	629	2,641	372	3,016	28,969	6,601	2,190	781	106	1,891	441
Claypan Unit											
Bond	--	12	--	78	380	27	--	6	6	--	--
Calhoun	74	46	70	135	1,114	754	--	253	46	--	61
Clark	89	110	115	247	976	677	41	61	96	293	--
Clay	--	172	1	206	1,429	832	--	79	3	--	1
Clinton	--	492	247	121	1,555	658	--	3	8	1	2
Crawford	43	29	--	303	2,181	283	193	221	2	--	--
Cumberland	12	39	108	93	458	463	7	10	68	43	--
Edwards	21	227	--	76	656	189	7	25	6	17	--
Effingham	--	128	67	154	602	215	--	59	25	--	--
Fayette	--	164	12	299	1,356	339	29	67	42	1	9
Greene	52	52	13	62	486	357	--	38	12	--	46
Jasper	20	85	28	427	1,357	125	106	175	1	--	--
Jefferson	--	60	--	35	1,930	408	18	18	3	--	--
Jersey	67	93	114	127	1,144	596	--	54	32	--	50
Lawrence	46	108	--	323	2,273	235	228	265	2	--	--
Macoupin	6	32	5	41	978	948	--	8	6	--	5
Madison	7	52	1	54	325	301	--	38	10	--	25
Marion	--	297	134	114	1,265	624	--	8	11	--	7
Monroe	86	108	11	99	693	537	--	76	49	--	43
Montgomery	--	13	1	19	184	143	--	12	12	--	1
Richland	37	382	--	429	1,061	384	--	114	15	14	--
St. Clair	13	213	135	24	574	322	--	18	3	--	3
Shelby	--	44	3	90	467	217	--	45	11	--	--
Wabash	19	22	--	126	292	50	11	58	7	--	--
Washington	--	444	219	--	1,503	464	--	128	--	--	5
Wayne	--	308	11	592	3,262	489	115	106	4	105	7
Total	592	3,732	1,295	4,274	28,501	10,637	755	1,945	480	474	265

(Table 8 continued on next page)

(Table 8 continued)

Unit and county	All species	Species group												
		Cypress	Short-leaf pine	Other pine	Red-cedar	Other soft-woods	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm
Prairie Unit													
Adams	1,442	--	--	--	1	--	38	12	--	--	12	58	6
Boone	179	--	--	--	--	--	5	--	--	--	3	5	81
Brown	2,050	--	--	--	--	--	47	26	--	--	9	113	8
Bureau	1,037	--	--	--	--	--	31	4	--	--	42	77	15
Carroll	1,781	--	--	4	--	--	85	10	--	--	101	142	40
Cass	559	--	--	--	--	--	7	7	--	--	1	66	--
Champaign	252	--	--	--	--	--	21	8	--	--	6	12	21
Christian	39	--	--	--	--	--	--	--	--	--	--	8	--
Coles	308	--	--	--	--	--	26	4	--	--	6	9	14
Cook	118	--	--	--	--	--	2	--	--	--	1	33	53
De Kalb	377	--	--	--	--	--	22	9	--	--	9	8	15
Dewitt	3	--	--	--	--	--	--	--	--	--	--	1	1
Douglas	153	--	--	--	--	--	12	3	--	--	3	4	7
Dupage	26	--	--	--	--	--	--	--	--	--	--	--	26
Edgar	580	--	--	--	--	--	40	8	--	--	10	18	22
Ford	--	--	--	--	--	--	--	--	--	--	--	--	--
Fulton	8,586	--	--	--	--	--	434	150	--	--	27	1250	32
Grundy	30	--	--	--	--	--	1	1	--	--	--	8	1
Hancock	252	--	--	--	2	--	1	10	--	--	3	3	--
Henderson	234	--	--	--	--	--	--	11	--	--	1	--	--
Henry	253	--	--	1	--	10	1	6	--	--	30	3	1
Iroquois	29	--	--	--	--	--	6	--	--	--	--	--	--
Jo Daviess	1,729	--	--	5	--	--	75	10	--	--	96	147	42
Kane	9	--	--	--	--	--	--	--	--	--	--	--	--
Kankakee	86	--	--	--	--	--	1	--	--	--	1	52	1
Kendall	--	--	--	--	--	--	--	--	--	--	--	--	--
Knox	703	--	--	--	--	--	18	7	--	--	15	2	1
Lake	188	--	--	5	--	--	4	--	--	--	1	14	117
La Salle	736	--	--	--	--	--	36	4	--	--	48	77	17
Lee	277	--	--	--	--	--	1	1	--	--	--	11	3
Livingston	--	--	--	--	--	--	--	--	--	--	--	--	--
Logan	94	--	--	--	--	--	4	4	--	--	--	23	--
Macon	4	--	--	--	--	--	--	--	--	--	--	--	--
Marshall	1,400	--	--	--	--	--	72	3	--	--	--	1	1
Mason	113	--	--	--	--	--	4	4	--	--	--	23	--
McDonough	879	--	--	--	--	--	9	7	--	--	8	429	--
McHenry	210	--	--	--	--	--	8	--	--	--	2	8	108
McLean	6	--	--	--	--	--	--	--	--	--	--	--	--
Menard	118	--	--	--	--	--	4	4	--	--	--	23	--
Mercer	698	--	--	--	--	--	14	3	--	--	35	--	--
Morgan	1,490	--	--	--	--	--	47	1	--	--	1	116	7
Moultrie	7	--	--	--	--	--	--	--	--	--	--	1	--
Ogle	930	--	--	90	--	1	21	51	--	--	17	68	55
Peoria	435	--	--	--	--	--	11	5	--	--	5	7	1
Piatt	--	--	--	--	--	--	--	--	--	--	--	--	--
Pike	3,186	--	--	--	1	--	66	29	--	--	14	11	19
Putnam	898	--	--	--	--	--	43	4	--	--	2	--	1
Rock Island	558	--	--	--	--	--	17	7	--	--	24	28	8
Sangamon	258	--	--	1	--	--	2	1	--	--	11	17	2
Schuyler	2,920	--	--	--	--	--	46	47	--	--	18	262	4
Scott	610	--	--	--	--	--	2	1	--	--	1	177	--
Stark	33	--	--	--	--	--	--	--	--	--	--	1	--
Stephenson	136	--	--	1	--	3	5	9	--	--	9	1	11
Tazewell	627	--	--	--	--	--	33	4	--	--	1	1	1
Vermillion	710	--	--	--	--	--	57	11	--	--	14	19	30
Warren	374	--	--	--	--	--	--	3	--	--	7	--	--
Whiteside	505	--	--	--	--	--	15	6	--	--	9	28	15
Will	77	--	--	--	--	--	1	--	--	--	1	46	1
Winnebago	314	--	--	10	--	--	12	41	--	5	11	22	24
Woodford	800	--	--	--	--	--	35	4	--	--	2	1	1
Total	40,406	--	--	117	4	14	1,442	540	--	5	617	3,434	813
State total	160,543	192	--	117	21	14	7,280	645	674	415	868	13,726	2,584

(Table 8 continued on next page)

(Table 8 continued)

Unit and county	Species group										
	Pecan hickory	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Prairie Unit											
Adams	1	11	8	306	570	320	--	11	66	--	22
Boone	--	--	--	--	25	60	--	--	--	--	--
Brown	--	25	133	106	1,143	392	--	12	36	--	--
Bureau	--	1	2	207	210	389	--	--	31	--	28
Carroll	--	8	1	1	660	613	--	--	60	--	56
Cass	--	4	14	20	316	106	--	7	11	--	--
Champaign	23	8	12	10	61	40	--	18	12	--	--
Christian	--	1	--	--	12	13	--	4	1	--	--
Coles	14	6	15	12	74	49	--	12	16	51	--
Cook	--	1	--	--	12	12	--	3	--	--	1
De Kalb	--	1	2	28	100	177	--	1	1	--	4
Dewitt	--	--	--	--	1	--	--	--	--	--	--
Douglas	7	3	7	6	36	25	--	6	8	26	--
Dupage	--	--	--	--	--	--	--	--	--	--	--
Edgar	23	11	26	22	147	113	--	20	33	87	--
Ford	--	--	--	--	--	--	--	--	--	--	--
Fulton	--	123	341	417	3,906	1,787	--	12	107	--	--
Grundy	--	1	--	--	1	13	--	1	1	--	2
Hancock	--	9	3	95	43	67	--	3	12	--	1
Henderson	--	3	--	52	50	117	--	--	--	--	--
Henry	--	--	1	--	36	89	--	--	75	--	--
Iroquois	--	--	--	--	15	8	--	--	--	--	--
Jo Daviess	--	1	23	23	634	533	--	--	85	--	55
Kane	--	--	--	--	--	2	--	--	7	--	--
Kankakee	--	1	--	--	18	8	--	3	--	--	1
Kendall	--	--	--	--	--	--	--	--	--	--	--
Knox	--	7	36	26	201	172	--	--	218	--	--
Lake	--	1	--	--	16	29	--	--	1	--	--
La Salle	--	3	1	--	225	242	--	7	47	--	29
Lee	--	7	--	28	83	141	--	--	1	--	1
Livingston	--	--	--	--	--	--	--	--	--	--	--
Logan	--	4	4	10	37	4	--	--	4	--	--
Macon	--	--	--	--	1	3	--	--	--	--	--
Marshall	--	3	197	79	585	419	--	--	40	--	--
Mason	--	4	4	10	37	4	--	--	23	--	--
McDonough	--	55	6	50	133	100	--	52	30	--	--
McHenry	--	1	--	--	37	45	--	--	1	--	--
McLean	--	--	--	--	1	4	--	--	1	--	--
Menard	--	4	4	10	54	11	--	--	4	--	--
Mercer	--	--	3	50	50	35	--	--	508	--	--
Morgan	--	32	83	80	693	357	--	24	49	--	--
Moultrie	--	1	--	1	3	1	--	--	--	--	--
Ogle	--	7	1	19	272	306	--	--	16	--	6
Peoria	--	7	28	11	268	79	--	--	13	--	--
Piatt	--	--	--	--	--	--	--	--	--	--	--
Pike	3	36	148	65	1,778	889	--	9	118	--	--
Putnam	--	3	86	78	386	256	--	--	39	--	--
Rock Island	--	--	1	--	147	130	--	--	188	--	8
Sangamon	--	5	--	23	58	115	1	1	17	--	4
Schuyler	--	27	231	277	1,570	367	--	27	44	--	--
Scott	--	4	6	6	297	104	--	8	4	--	--
Stark	--	--	--	--	--	32	--	--	--	--	--
Stephenson	--	3	--	--	36	52	--	--	6	--	--
Tazewell	--	6	51	34	282	194	--	--	20	--	--
Vermillion	33	14	36	29	170	113	--	28	36	120	--
Warren	--	--	--	19	16	18	--	--	311	--	--
Whiteside	--	4	1	57	134	215	--	--	16	--	5
Will	--	1	--	--	15	8	--	3	--	--	1
Winnebago	--	7	3	62	18	86	--	--	12	--	1
Woodford	1	7	76	59	360	214	--	--	39	--	1
Total	105	471	1,594	2,388	16,033	9,678	1	272	2,368	284	226
State total	1,326	6,844	3,261	9,678	73,503	26,916	2,946	2,998	2,954	2,649	932

Table 9.--Saw log receipts in Illinois by Forest Survey Unit, species group, and area of origin, 1983

(In thousand board feet)[1/]

ALL UNITS

Species group	All areas	Area of origin					
		Illinois	Wisconsin	Missouri	Indiana	Iowa	Kentucky
Softwoods							
Cypress	212	192	--	10	--	--	10
Other pine	117	117	--	--	--	--	--
Redcedar	21	21	--	--	--	--	--
Other softwoods	14	14	--	--	--	--	--
Total	364	344	--	10	--	--	10
Hardwoods							
Ash	6,083	5,776	113	69	22	55	48
Basswood	586	558	28	--	--	--	--
Beech	688	642	--	23	--	--	23
Blackgum	340	314	--	10	--	--	16
Black cherry	943	782	48	8	7	97	1
Cottonwood	13,794	12,598	127	119	817	69	64
Elm	3,321	1,663	1,557	38	39	14	10
Pecan hickory	130	113	--	--	3	--	14
Other hickory	6,212	6,110	--	49	25	--	28
Hard maple	2,920	2,840	--	32	23	--	25
Soft maple	7,744	7,568	7	11	81	--	77
Red oak	70,019	67,373	447	1,221	477	276	225
White oak	22,798	21,329	605	411	170	235	48
Sweetgum	2,714	2,610	--	48	8	--	48
Sycamore	2,502	2,383	--	60	55	--	4
Black walnut	3,040	2,530	22	311	11	166	--
Yellow-poplar	1,929	1,833	--	48	--	--	48
Other hardwoods	367	314	18	--	7	28	--
Total	146,130	137,336	2,972	2,458	1,745	940	679
All species	146,494	137,680	2,972	2,468	1,745	940	689
SOUTHERN UNIT							
Softwoods							
Cypress	212	192	--	10	--	--	10
Other pine	--	--	--	--	--	--	--
Redcedar	9	9	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--
Total	221	201	--	10	--	--	10
Hardwoods							
Ash	2,182	2,086	--	48	--	--	48
Basswood	4	4	--	--	--	--	--
Beech	688	642	--	23	--	--	23
Blackgum	307	281	--	10	--	--	16
Black cherry	125	123	--	1	--	--	1
Cottonwood	3,822	3,722	--	36	--	--	64
Elm	669	649	--	10	--	--	10
Pecan hickory	30	16	--	--	--	--	14
Other hickory	2,479	2,437	--	14	--	--	28
Hard maple	246	217	--	4	--	--	25
Soft maple	2,380	2,299	--	4	--	--	77
Red oak	25,731	25,338	--	168	--	--	225
White oak	4,378	4,282	--	48	--	--	48
Sweetgum	2,008	1,912	--	48	--	--	48
Sycamore	581	573	--	4	--	--	4
Black walnut	22	22	--	--	--	--	--
Yellow-poplar	1,855	1,759	--	48	--	--	48
Other hardwoods	49	49	--	--	--	--	--
Total	47,556	46,411	--	466	--	--	679
All species	47,777	46,612	--	476	--	--	689

(Table 9 continued on next page)

[1/] International 1/4-inch rule.

(Table 9 continued)

CLAYPAN UNIT

Species group	All areas	Area of origin					
		Illinois	Wisconsin	Missouri	Indiana	Iowa	Kentucky
Softwoods							
Cypress	--	--	--	--	--	--	--
Other pine	--	--	--	--	--	--	--
Redcedar	8	8	--	--	--	--	--
Other softwoods	--	--	--	--	--	--	--
Total	8	8	--	--	--	--	--
Hardwoods							
Ash	2,371	2,346	--	21	4	--	--
Basswood	55	55	--	--	--	--	--
Blackgum	28	28	--	--	--	--	--
Black cherry	85	78	--	7	--	--	--
Cottonwood	5,832	5,463	--	83	286	--	--
Elm	358	298	--	28	32	--	--
Pecan hickory	87	84	--	--	3	--	--
Other hickory	3,337	3,284	--	35	18	--	--
Hard maple	933	905	--	28	--	--	--
Soft maple	3,393	3,328	--	7	58	--	--
Red oak	26,921	25,669	--	1,049	203	--	--
White oak	7,683	7,328	--	345	10	--	--
Sweetgum	705	697	--	--	8	--	--
Sycamore	1,708	1,645	--	55	8	--	--
Black walnut	247	247	--	--	--	--	--
Yellow-poplar	60	60	--	--	--	--	--
Other hardwoods	61	61	--	--	--	--	--
Total	53,864	51,576	--	1,658	630	--	--
All species	53,872	51,584	--	1,658	630	--	--

PRAIRIE UNIT

Softwoods							
Cypress	--	--	--	--	--	--	--
Other pine	117	117	--	--	--	--	--
Redcedar	4	4	--	--	--	--	--
Other softwoods	14	14	--	--	--	--	--
Total	135	135	--	--	--	--	--
Hardwoods							
Ash	1,530	1,344	113	--	18	55	--
Basswood	527	499	28	--	--	--	--
Blackgum	5	5	--	--	--	--	--
Black cherry	733	581	48	--	7	97	--
Cottonwood	4,140	3,413	127	--	531	69	--
Elm	2,294	716	1,557	--	7	14	--
Pecan hickory	13	13	--	--	--	--	--
Other hickory	396	389	--	--	7	--	--
Hard maple	1,741	1,718	--	--	23	--	--
Soft maple	1,971	1,941	7	--	23	--	--
Red oak	17,367	16,366	447	4	274	276	--
White oak	10,737	9,719	605	18	160	235	--
Sweetgum	1	1	--	--	--	--	--
Sycamore	213	165	--	1	47	--	--
Black walnut	2,771	2,261	22	311	11	166	--
Yellow-poplar	14	14	--	--	--	--	--
Other hardwoods	257	204	18	--	7	28	--
Total	44,710	39,349	2,972	334	1,115	940	--
All species	44,845	39,484	2,972	334	1,115	940	--

Table 10.--Pulpwood production in Illinois by species group, 1965, 1970, 1975, 1980, and 1983

(In standard cords, unpeeled)[1/]

Species group	1965	1970	1975	1980	1983
Roundwood[2/]					
Softwoods	3,311	1,280	1,858	18,468	18,201
Soft hardwoods	56,552	33,571	14,754	13,332	19,638
Hard hardwoods	17,486	31,708	15,547	25,034	19,183
Total	77,349	66,559	32,159	56,834	57,022
Residue					
Softwoods	778	1,401	4,184	892	3,395
Hardwoods	13,582	50,060	68,693	44,691	30,509
Total	14,360	51,461	72,877	45,583	33,904
All material	91,709	118,020	105,036	102,417	90,926

[1/] 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[2/] Includes chips from roundwood.

Table 11.--Pulpwood production by species group and Forest Survey Unit, Illinois, 1983

(In standard cords, unpeeled)[1/]

Species group	All Units	Forest Survey Unit		
		Southern	Claypan	Prairie
Roundwood[2/]				
Shortleaf pine	17,899	17,899	--	--
Other pine	302	--	--	302
Ash	3,296	2,707	166	423
Blackgum	416	416	--	--
Cottonwood	8,982	1,148	361	7,473
Elm	1,138	419	68	651
Pecan hickory	2,534	1,457	138	939
Other hickory	1,407	951	89	367
Hard maple	832	621	31	180
Soft maple	5,135	3,513	612	1,010
Red oak	5,759	4,728	440	591
White oak	5,358	4,342	429	587
Sweetgum	1,758	1,758	--	--
Sycamore	2,079	1,672	258	149
Yellow-poplar	127	127	--	--
Total	57,022	41,758	2,592	12,672
Residue				
Softwoods	3,395	[3/]	[3/]	[3/]
Hardwoods	30,509	[3/]	[3/]	[3/]
Total	33,904	[3/]	[3/]	[3/]
All material	90,926	[3/]	[3/]	[3/]

[1/] 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[2/] Includes chips from roundwood.

[3/] Not available.

Table 12.--Veneer log production by species group, Illinois, 1966, 1970, 1976, and 1983

(In thousand board feet)[1/]

Species group	1966	1970	1976	1983
Ash	13	6	29	18
Basswood	22	21	--	--
Gum	133	164	24	--
Black cherry	4	--	1	--
Cottonwood	2,131	1,684	1,486	7
Pecan hickory	163	238	163	85
Hard maple	36	21	4	--
Soft maple	90	180	292	--
Red oak	868	186	221	540
White oak	71	172	1,262	2,555
Sycamore	202	142	72	--
Walnut	2,372	1,842	942	760
Yellow-poplar	521	22	26	2
Other hardwoods	901	3	11	3
All species	7,527	4,681	4,533	3,970

[1/] International 1/4-inch rule.

Table 13.--Veneer log production by species group and State or country of destination, Illinois, 1983

(In thousand board feet)[1/]

		Destination of wood						
Species group	Total	Illinois	Indiana	Michigan	Wisconsin	Missouri	Other States	Other Countries
Hardwoods								
Ash	18	--	1	--	15	--	2	--
Cottonwood	7	7	--	--	--	--	--	--
Elm	3	--	--	--	--	3	--	--
Pecan hickory	85	--	82	--	--	--	3	--
Red oak	540	--	89	28	263	--	23	137
White oak	2,555	--	1,440	515	16	250	159	175
Black walnut	760	--	302	28	--	40	133	257
Yellow-poplar	2	2	--	--	--	--	--	--
All species	3,970	9	1,914	571	294	293	320	569

[1/] International 1/4-inch rule.

Table 14.--Veneer log production by Forest Survey Unit, county, and species group, Illinois, 1983

(In thousand board feet)[1/]

Unit and county	All species	Species group							
		Ash	Cotton-wood	Elm	Pecan hickory	Red oak	White oak	Black walnut	Yellow-poplar
Southern Unit									
Franklin	16	--	--	--	--	--	16	--	--
Gallatin	92	--	--	--	34	6	52	--	--
Hamilton	52	--	--	--	--	--	52	--	--
Hardin	66	--	--	--	23	--	43	--	--
Jackson	128	8	--	--	--	95	16	9	--
Johnson	53	--	--	--	--	--	53	--	--
Pope	132	7	--	--	--	77	38	10	--
Pulaski	5	--	--	--	--	--	5	--	--
Randloph	55	--	2	--	--	53	--	--	--
Saline	44	--	--	--	--	--	44	--	--
Union	195	--	5	1	--	52	116	19	2
White	55	--	--	--	22	--	33	--	--
Williamson	51	--	--	--	--	--	41	10	--
Total	944	15	7	1	79	283	509	48	2
Claypan Unit									
Calhoun	123	--	--	--	--	17	84	22	--
Clark	42	--	--	--	--	--	--	42	--
Crawford	30	--	--	--	--	--	--	30	--
Edwards	22	--	--	--	--	--	22	--	--
Fayette	63	--	--	--	--	--	50	13	--
Greene	235	--	--	--	--	7	216	12	--
Jersey	271	--	--	--	--	7	252	12	--
Lawrence	67	1	--	--	3	29	9	25	--
Macoupin	43	--	--	--	--	11	14	18	--
Montgomery	25	--	--	--	--	7	8	10	--
Shelby	33	--	--	--	--	9	10	14	--
Wabash	115	--	--	--	--	11	104	--	--
Total	1,069	1	--	--	3	98	769	198	--
Prairie Unit									
Adams	299	--	--	--	--	18	257	24	--
Brown	33	--	--	--	--	--	33	--	--
Carroll	8	--	--	--	--	--	--	8	--
Cass	32	--	--	--	--	--	32	--	--
Edgar	22	--	--	--	--	--	11	11	--
Fulton	146	--	--	--	--	25	58	63	--
Hancock	105	--	--	--	--	7	62	36	--
Henderson	32	--	--	--	--	--	3	29	--
Henry	24	2	--	--	3	6	6	7	--
Jo Daviess	55	--	--	--	--	15	18	22	--
Knox	84	--	--	--	--	18	17	49	--
Marshall	12	--	--	--	--	--	5	7	--
Mason	7	--	--	--	--	--	--	7	--
McDonough	188	--	--	--	--	--	161	27	--
Mercer	30	--	--	--	--	3	3	24	--
Morgan	35	--	--	--	--	--	35	--	--
Ogle	21	--	--	--	--	6	7	8	--
Peoria	217	--	--	2	--	7	156	52	--
Pike	137	--	--	--	--	20	91	26	--
Rock Island	36	--	--	--	--	12	13	11	--
Sangamon	12	--	--	--	--	--	3	9	--
Schuyler	60	--	--	--	--	8	10	42	--
Scott	21	--	--	--	--	--	21	--	--
Stark	33	--	--	--	--	9	8	16	--
Tazewell	202	--	--	--	--	--	202	--	--
Vermillion	16	--	--	--	--	--	--	16	--
Warren	26	--	--	--	--	3	3	20	--
Whiteside	4	--	--	--	--	2	2	--	--
Woodford	60	--	--	--	--	--	60	--	--
Total	1,957	2	--	2	3	159	1,277	514	--
State total	3,970	18	7	3	85	540	2,555	760	2

[1/] International 1/4-inch rule.

Table 15.--Fuelwood production from roundwood by species group, Forest Survey Unit and county, Illinois, 1983

(In standard cords, unpeeled)[1/]

Unit and county	All species	Species group									
		Short-leaf pine	Other pine	Red-cedar	Ash	Bass-wood	Black-gum	Black cherry	Cotton-wood	Elm	Pecan hickory
Southern Unit											
Alexander	4	--	--	--	--	--	--	--	--	--	--
Franklin	7,966	--	--	--	118	--	--	5	--	128	157
Gallatin	1,398	--	--	--	833	--	--	--	--	128	199
Hamilton	8,548	--	--	--	1,348	--	--	--	--	128	756
Hardin	3,747	--	--	--	--	--	--	--	--	--	16
Jackson	7,032	--	--	--	204	--	--	2	--	254	234
Johnson	1,656	--	1	--	153	--	--	--	--	--	71
Massac	837	--	--	--	18	--	15	--	--	34	102
Perry	5,649	--	--	--	41	--	--	73	--	110	194
Pope	4,229	--	--	--	1,367	--	--	--	--	--	193
Pulaski	11,275	--	--	--	2,188	--	--	633	--	346	1,177
Randolph	14,419	--	--	--	3,142	--	--	159	--	748	1,148
Saline	1,827	33	--	--	380	--	--	237	2	1	5
Union	10,090	--	--	272	1,038	--	--	6	--	600	583
White	2,266	--	--	--	572	--	--	9	--	--	303
Williamson	7,626	--	--	--	802	--	--	781	--	188	155
Total	88,569	33	1	272	12,204	--	15	1,905	2	2,665	5,293
Claypan Unit											
Bond	6,957	--	--	--	1,546	217	--	328	--	115	327
Calhoun	737	--	--	--	--	--	--	--	--	68	33
Clark	16,662	--	--	--	3,485	--	--	645	--	--	654
Clay	2,426	--	43	--	259	--	--	--	--	--	189
Clinton	5,942	--	--	--	2,317	--	--	103	--	41	69
Crawford	18,929	--	--	--	2,808	--	--	674	--	466	811
Cumberland	6,328	--	--	--	667	--	--	818	--	340	461
Edwards	4,164	--	--	--	85	--	--	--	--	--	198
Effingham	3,957	--	--	--	846	--	--	6	13	14	468
Fayette	7,930	--	--	--	--	--	--	--	--	--	712
Greene	9,107	--	--	--	457	--	--	126	--	817	989
Jasper	3,356	--	--	--	--	--	--	--	352	353	275
Jefferson	4,116	--	--	2	123	--	--	113	--	80	238
Jersey	11,002	--	--	--	801	--	--	--	--	596	267
Lawrence	2,098	--	--	--	1,104	--	--	--	--	1	52
Macoupin	5,734	--	--	--	45	--	--	400	--	448	246
Madison	24,174	--	705	9	3,127	--	--	442	936	1,899	281
Marion	8,983	--	--	--	590	--	--	2	--	127	1,508
Monroe	4,801	--	--	--	--	--	--	126	--	91	440
Montgomery	7,530	--	--	--	--	--	--	142	--	--	78
Richland	2,746	--	--	--	462	--	--	--	--	--	158
St. Clair	17,844	--	239	--	1,119	--	--	3	654	1,322	1,692
Shelby	9,552	--	--	--	188	--	--	141	648	515	647
Wabash	6,563	--	--	--	10	--	--	113	--	165	1,126
Washington	13,331	--	--	--	--	--	--	304	--	1,652	1,541
Wayne	10,344	--	--	--	1,051	--	--	160	--	169	692
Total	215,313	--	987	11	21,090	217	--	4,646	2,603	9,279	14,152

(Table 15 continued on next page)

[1/] 128 cubic feet, consisting of 70 cubic feet of wood and 58 cubic feet of bark and air space.

(Table 15 continued)

Unit and county	Species group									
	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Southern Unit										
Alexander	1	--	--	2	1	--	--	--	--	--
Franklin	246	30	133	3,839	2,066	--	--	569	--	675
Gallatin	47	--	--	68	38	4	4	--	--	77
Hamilton	1,185	190	863	2,609	1,469	--	--	--	--	--
Hardin	26	--	--	2,371	1,334	--	--	--	--	--
Jackson	365	28	125	3,687	2,074	--	5	--	3	51
Johnson	110	--	--	846	475	--	--	--	--	--
Massac	111	6	27	275	153	84	--	--	10	2
Perry	303	2	11	3,091	1,739	--	85	--	--	--
Pope	302	--	--	1,386	780	--	--	--	--	201
Pulaski	1,841	1	5	3,243	1,825	--	--	--	--	16
Randolph	1,626	380	1,729	3,315	1,864	--	159	--	--	149
Saline	8	--	--	557	314	--	290	--	--	--
Union	914	48	221	3,665	2,061	--	--	--	1	681
White	473	17	79	516	290	--	--	--	--	7
Williamson	241	212	963	2,513	1,460	--	--	--	--	311
Total	7,799	914	4,156	31,983	17,943	88	543	569	14	2,170
Claypan Unit										
Bond	513	56	239	1,618	1,495	--	--	--	--	503
Calhoun	51	--	--	304	281	--	--	--	--	--
Clark	1,022	92	393	2,620	2,579	--	--	--	--	5,172
Clay	295	9	40	828	763	--	--	--	--	--
Clinton	108	7	29	1,249	1,152	--	--	--	--	867
Crawford	1,270	96	409	5,615	5,184	--	--	--	--	1,596
Cumberland	721	106	452	1,158	1,071	--	--	--	--	534
Edwards	309	177	754	829	764	--	--	423	--	625
Effingham	730	5	12	964	889	--	--	2	--	8
Fayette	1,113	--	--	3,540	2,565	--	--	--	--	--
Greene	1,545	165	704	1,868	2,152	--	--	39	--	245
Jasper	430	--	--	1,012	934	--	--	--	--	--
Jefferson	374	69	294	1,106	1,389	--	--	--	--	328
Jersey	418	484	2,065	2,684	2,751	--	--	17	--	919
Lawrence	82	--	1	73	68	--	--	--	--	717
Macoupin	383	121	515	677	799	--	--	113	--	1,987
Madison	441	778	3,529	3,781	4,164	--	817	184	--	3,081
Marion	2,357	307	1,308	1,750	970	--	--	--	--	64
Monroe	688	183	779	1,297	1,197	--	--	--	--	--
Montgomery	122	52	223	1,046	2,578	--	--	--	--	3,289
Richland	247	--	--	977	902	--	--	--	--	--
St. Clair	2,645	139	597	3,878	3,579	--	778	289	--	910
Shelby	1,011	231	980	2,453	2,264	--	--	6	--	468
Wabash	1,761	220	935	1,018	939	--	--	--	--	276
Washington	2,410	21	88	2,982	3,725	--	--	--	--	608
Wayne	1,083	16	69	3,562	3,288	--	--	--	--	254
Total	22,129	3,334	14,415	48,889	48,442	--	1,595	1,073	--	22,451

(Table 15 continued on next page)

(Table 15 continued)

Unit and county	All species	Species group									
		Short-leaf pine	Other pine	Red-cedar	Ash	Bass-wood	Black-gum	Black cherry	Cotton-wood	Elm	Pecan hickory
Prairie Unit											
Adams	17,937	--	369	167	283	--	--	172	--	2,282	434
Boone	4,622	--	--	--	235	--	--	117	--	529	216
Brown	2,017	--	--	--	144	--	--	88	56	56	48
Bureau	3,194	--	--	--	--	--	--	6	--	135	16
Carroll	1,437	--	--	--	--	--	--	43	--	--	21
Cass	1,979	--	--	--	--	--	--	--	--	35	4
Champaign	9,358	--	97	30	204	50	--	208	1,012	1,523	--
Christian	5,740	--	--	--	--	--	--	--	--	--	26
Coles	4,327	--	--	--	--	--	--	66	--	--	133
Cook	157,333	--	1,511	--	2,317	455	--	3,416	8,195	10,064	5,598
De Kalb	5,334	--	--	--	62	--	--	249	--	57	187
Dewitt	1,273	--	--	--	--	--	--	--	--	--	--
Douglas	1,165	--	--	--	86	--	--	--	--	--	61
Dupage	29,179	--	--	--	6,912	--	--	2	1	11,042	1
Edgar	4,739	--	--	--	--	--	--	208	1,085	--	--
Ford	1,196	--	--	--	8	--	--	--	--	3	119
Fulton	12,352	--	11	--	19	--	--	302	275	1,675	93
Grundy	18,736	--	--	--	2,558	--	--	95	282	461	693
Hancock	24,168	--	--	--	2,197	--	--	512	--	455	876
Henderson	3,964	--	--	--	86	--	--	677	6	460	77
Henry	20,341	--	--	--	149	--	--	172	8	6,399	--
Iroquois	23,976	--	42	--	1,178	--	--	--	4,390	--	385
Jo Daviess	26,042	--	--	--	1,610	61	--	19	--	6,274	147
Kane	19,699	--	--	--	--	--	--	--	--	5,894	94
Kankakee	21,138	--	4	--	550	--	--	359	224	4,306	195
Kendall	46,257	--	--	637	1,547	--	--	--	--	114	2,063
Knox	5,302	--	42	--	--	--	--	216	--	1,386	77
Lake	83,119	--	--	--	--	--	--	1,381	--	45	172
La Salle	16,257	--	84	--	38	--	--	129	1,068	3,537	10
Lee	8,722	--	22	--	--	--	--	622	390	205	50
Livingston	8,288	--	300	--	284	--	--	--	1	433	7
Logan	2,195	--	--	--	--	--	--	--	--	408	46
Macon	8,076	--	109	--	268	--	--	279	2,912	967	24
Marshall	941	--	--	--	140	--	--	--	--	--	--
Mason	3,699	--	--	--	191	--	--	--	--	--	253
McDonough	10,194	--	--	--	--	--	--	4	--	529	348
McHenry	207,898	--	--	--	841	--	--	2,687	2,586	10,548	1,288
McLean	10,889	--	--	--	709	--	--	195	667	310	186
Menard	2,629	--	--	--	--	--	--	364	--	220	--
Mercer	1,529	--	--	--	--	--	--	--	102	--	69
Morgan	4,245	--	--	--	17	--	--	35	--	957	174
Moultrie	2,007	--	--	--	--	--	--	--	--	116	--
Ogle	12,439	--	--	338	7	--	--	490	--	2	568
Peoria	21,524	--	13	--	--	--	--	160	365	3,899	163
Piatt	3,473	--	--	--	--	--	--	--	54	623	132
Pike	10,521	--	--	--	--	--	--	--	--	1,990	46
Putnam	3,701	--	--	--	1	--	--	--	--	3	--
Rock Island	9,732	--	268	--	--	--	--	283	--	231	28
Sangamon	10,387	--	21	--	13	--	33	1,437	--	1,725	47
Schuyler	1,661	--	--	--	--	--	--	--	--	236	66
Scott	3,053	--	--	--	--	--	--	157	--	227	--
Stark	655	--	--	--	--	--	--	--	--	226	--
Stephenson	5,972	--	--	--	--	--	--	492	--	2,849	12
Tazewell	23,694	--	169	--	2,539	--	--	85	555	2,716	683
Vermillion	53,394	--	99	--	1,415	--	--	778	990	335	3,489
Warren	5,607	--	--	--	--	--	--	87	--	1	569
Whiteside	3,962	--	141	--	3	--	--	36	157	363	--
Will	246,879	--	114	--	2,770	77	--	4,832	1,849	12,914	1,941
Winnebago	42,089	--	1,003	--	760	103	--	2,692	2,229	6,302	624
Woodford	27,130	--	114	--	5,099	--	--	148	115	776	1,331
Total	1,329,366	--	4,533	1,172	35,240	746	33	24,300	29,574	106,843	23,890
State total	1,633,248	33	5,521	1,455	68,534	963	48	30,851	32,179	118,787	43,335

(Table 15 continued on next page)

(Table 15 continued)

Unit and county	Species group									
	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Prairie Unit										
Adams	1,114	53	387	3,285	6,374	--	--	220	--	2,797
Boone	554	39	286	818	1,591	--	--	226	--	11
Brown	121	40	298	324	630	--	--	71	--	141
Bureau	40	35	254	509	1,007	--	--	135	--	1,057
Carroll	54	23	169	323	628	--	--	71	--	105
Cass	9	1	14	611	1,186	--	--	1	--	118
Champaign	--	101	738	370	718	--	465	520	--	3,322
Christian	67	10	68	846	2,137	--	--	1,270	--	1,316
Coles	341	76	560	877	1,704	--	--	87	--	483
Cook	14,395	4,157	30,490	24,874	48,283	--	--	712	--	2,866
De Kalb	481	45	391	1,197	2,326	--	--	57	--	282
Dewitt	--	124	910	41	79	--	--	--	--	119
Douglas	156	--	--	88	171	--	--	--	--	603
Dupage	4	106	787	3,509	6,810	--	--	4	--	1
Edgar	--	191	1,397	138	269	--	--	601	--	850
Ford	306	15	106	216	422	--	--	--	--	1
Fulton	236	179	1,314	1,897	3,119	--	--	535	--	2,697
Grundy	1,782	132	968	1,764	3,423	--	--	--	--	6,578
Hancock	2,253	143	1,059	4,376	8,495	--	--	--	--	3,802
Henderson	200	15	113	623	1,210	--	--	--	--	497
Henry	--	151	1,108	3,417	6,633	--	--	224	--	2,080
Iroquois	993	309	2,262	3,345	4,932	--	--	230	--	5,910
Jo Daviess	376	779	5,716	3,253	6,314	--	--	269	--	1,224
Kane	244	90	659	3,490	6,777	--	--	4	--	2,447
Kankakee	502	473	3,468	3,497	6,786	--	--	--	--	774
Kendall	5,305	334	2,451	9,362	18,175	--	--	4,093	--	2,176
Knox	198	26	189	965	1,709	--	--	211	--	283
Lake	443	302	2,221	24,643	47,833	--	--	4	--	6,075
La Salle	24	315	2,451	1,074	2,086	--	--	63	--	5,378
Lee	129	39	288	1,526	2,963	--	--	--	--	2,488
Livingston	21	24	174	733	1,422	--	--	61	--	4,828
Logan	117	85	622	225	437	--	--	--	--	255
Macon	63	124	908	452	793	--	94	88	--	995
Marshall	--	3	19	215	416	--	--	--	--	148
Mason	650	--	--	785	1,526	--	--	--	--	294
McDonough	896	273	257	1,389	1,684	--	--	--	--	4,814
McHenry	3,312	637	4,677	59,573	114,851	--	--	--	--	6,898
McLean	479	117	962	1,149	2,231	--	240	347	8	3,289
Menard	--	27	199	220	426	--	--	59	--	1,114
Mercer	180	26	192	22	721	--	--	--	--	217
Morgan	494	182	1,336	219	427	--	--	35	--	369
Moultrie	--	--	--	154	298	--	--	--	--	1,439
Ogle	1,463	--	--	2,315	3,922	--	--	20	--	3,314
Peoria	419	591	2,394	4,385	8,512	--	--	48	--	575
Piatt	340	45	322	291	562	--	--	284	--	820
Pike	117	--	--	2,704	5,249	--	--	26	--	389
Putnam	--	--	3	10	3,684	--	--	--	--	--
Rock Island	73	183	1,341	1,513	2,938	--	--	115	--	2,759
Sangamon	118	127	926	957	1,861	--	--	490	--	2,632
Schuyler	169	77	--	379	734	--	--	--	--	--
Scott	--	--	--	830	1,612	--	--	227	--	--
Stark	--	--	--	134	261	--	--	--	--	34
Stephenson	31	78	574	568	1,104	--	--	4	--	260
Tazewell	1,755	138	1,633	2,628	5,101	--	--	1,217	--	4,475
Vermillion	8,970	524	4,159	5,084	9,867	--	6,097	5,053	--	6,534
Warren	1,462	38	275	646	1,255	--	--	--	--	1,274
Whiteside	--	3	40	875	1,698	--	--	--	--	646
Will	4,989	5,038	36,950	43,077	83,620	--	1,291	4	--	47,413
Winnebago	1,604	359	2,639	6,788	13,175	--	--	494	--	3,317
Woodford	3,421	34	246	4,899	9,507	--	--	642	--	798
Total	61,470	17,036	121,970	244,477	474,684	--	8,187	18,822	8	156,381
State total	91,398	21,284	140,541	325,349	541,069	88	10,325	20,464	22	181,002

Table 16.--Production of posts, handle bolts, mine timbers, and miscellaneous products[1/] by Forest Survey Unit, county, and species group, Illinois, 1983

(In thousand cubic feet)

Unit and county	All species	Species group								
		Redcedar	Ash	Elm	Pecan hickory	Other hickory	Red oak	White oak	Black walnut	Other species
Southern Unit										
Alexander	11	--	--	--	--	9	--	2	--	--
Franklin	2	--	--	--	--	--	--	2	--	--
Hardin	54	--	11	--	--	--	30	13	--	--
Jackson	18	--	11	--	--	--	1	6	--	--
Johnson	52	--	45	--	--	4	--	3	--	--
Massac	13	--	11	--	--	1	--	1	--	--
Perry	2	--	--	--	--	--	--	2	--	--
Pope	137	--	11	--	--	5	84	37	--	--
Pulaski	10	--	6	--	--	2	--	1	--	1
Randloph	6	--	--	--	--	--	3	3	--	--
Saline	69	--	--	--	1	1	9	8	--	50
Union	42	--	36	--	--	3	--	3	--	--
Williamson	11	--	6	--	--	3	--	2	--	--
Total	427	--	137	--	1	28	127	83	--	51
Claypan Unit										
Bond	2	--	--	--	--	--	--	1	--	1
Calhoun	16	--	16	--	--	--	--	--	--	--
Clark	19	--	4	--	--	--	--	--	--	15
Clay	81	--	35	--	--	--	--	46	--	--
Clinton	2	--	--	--	--	--	--	2	--	--
Crawford	51	--	35	--	--	--	--	--	--	16
Effingham	90	--	9	--	--	--	--	--	--	81
Fayette	3	--	--	--	--	--	--	3	--	--
Greene	92	--	11	--	--	--	--	--	--	81
Jasper	9	--	9	--	--	--	--	--	--	--
Jefferson	7	--	5	--	--	--	--	2	--	--
Jersey	18	--	16	--	--	--	--	2	--	--
Lawrence	48	--	35	--	--	--	--	13	--	--
Macoupin	16	--	11	--	--	--	--	--	--	5
Madison	16	--	11	--	--	--	--	2	--	3
Marion	5	--	3	--	--	--	--	2	--	--
Monroe	4	--	--	--	--	--	2	2	--	--
Montgomery	2	--	--	--	--	--	--	--	--	2
St. Clair	14	--	11	1	--	--	--	2	--	--
Wabash	8	--	4	--	--	--	--	4	--	--
Washington	2	--	--	--	--	--	--	2	--	--
Wayne	46	--	44	--	--	--	--	--	--	2
Total	551	--	259	1	--	--	2	83	--	206
Prairie Unit										
Adams	10	--	--	--	--	--	--	--	--	10
Cass	4	--	--	--	--	--	--	--	--	4
Coles	20	--	--	--	--	--	--	--	--	20
Fulton	5	--	--	--	--	--	--	--	--	5
Hancock	51	--	--	--	--	--	--	--	--	51
Kendall	39	--	--	--	--	--	--	--	--	39
Logan	8	--	--	--	--	--	--	--	--	8
Macon	80	--	--	--	5	14	19	34	--	8
Mason	18	18	--	--	--	--	--	--	--	--
McLean	228	18	--	--	6	15	21	41	--	127
Piatt	5	--	--	--	--	--	--	--	--	5
Sangamon	3	--	--	--	--	--	--	1	--	2
Tazewell	9	--	--	--	--	--	--	--	--	9
Vermillion	5	--	5	--	--	--	--	--	--	--
Winnebago	2	--	--	--	--	--	1	1	--	--
Woodford	3	--	--	--	--	--	--	--	3	--
Total	490	36	5	--	11	29	41	77	3	288
State total	1,468	36	401	1	12	57	170	243	3	545

[1/] Includes cooperage logs, piling, and specialty products.

Table 17.--Logging residue generated during roundwood production by species group, Forest Survey Unit and county, Illinois, 1983

(In thousand cubic feet)

Unit and county	All species	Species group										
		Cypress	Short-leaf pine	Other pine	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm	Pecan hickory
Southern Unit												
Alexander	571	3	--	--	46	--	18	8	2	31	19	12
Franklin	1,293	--	--	--	22	--	2	--	--	41	38	3
Gallatin	317	--	--	--	6	--	--	2	--	31	3	10
Hamilton	282	--	--	--	2	--	--	1	--	10	1	--
Hardin	389	--	1	--	18	--	6	2	2	9	6	3
Jackson	946	--	--	--	43	--	1	2	--	10	24	18
Johnson	659	3	1	--	72	--	18	10	3	18	18	6
Massac	289	1	--	--	27	--	9	3	2	9	6	1
Perry	284	--	--	--	11	--	--	--	--	3	8	7
Pope	456	1	9	--	24	--	7	6	2	15	6	2
Pulaski	161	--	--	--	15	--	4	1	--	10	3	2
Randolph	321	--	--	--	19	--	--	1	--	29	13	13
Saline	325	--	4	--	13	--	4	2	--	13	2	--
Union	697	3	--	--	72	--	20	7	3	35	22	12
White	849	--	--	--	27	--	3	6	1	199	3	4
Williamson	362	--	1	--	98	--	6	2	1	6	8	4
Total	8,201	11	16	--	515	--	98	53	16	469	180	97
Claypan Unit												
Bond	96	--	--	--	2	--	--	--	--	25	--	--
Calhoun	448	--	--	--	28	--	--	--	1	45	13	11
Clark	453	--	--	--	44	2	--	--	6	21	6	13
Clay	464	--	--	--	45	--	--	--	--	20	--	--
Clinton	510	--	--	--	65	1	--	--	--	9	--	--
Crawford	545	--	--	--	39	--	--	--	--	44	2	7
Cumberland	197	--	--	--	12	--	--	--	4	7	--	2
Edwards	191	--	--	--	16	--	--	--	--	4	--	3
Effingham	237	--	--	--	16	2	--	--	2	44	--	--
Fayette	411	--	--	--	13	--	--	--	--	67	8	--
Greene	204	--	--	--	19	1	--	--	--	13	9	8
Jasper	411	--	--	--	28	--	--	--	--	52	--	3
Jefferson	355	--	--	--	4	--	--	--	--	5	--	--
Jersey	389	--	--	--	40	3	--	--	--	9	13	10
Lawrence	568	--	--	--	34	--	--	--	--	39	--	7
Macoupin	302	--	--	--	16	--	--	--	--	1	1	--
Madison	135	--	--	--	17	--	--	--	--	3	3	1
Marion	410	--	--	--	40	--	--	--	--	25	--	--
Monroe	283	--	--	--	15	--	--	--	--	24	9	13
Montgomery	61	--	--	--	2	--	--	--	--	7	--	--
Richland	434	--	--	--	46	--	--	--	--	44	--	6
St. Clair	224	--	--	--	36	--	--	--	--	3	--	2
Shelby	147	--	--	--	8	--	--	--	--	19	--	--
Wabash	128	--	--	--	11	--	--	--	--	29	2	3
Washington	448	--	--	--	25	--	--	--	--	13	18	--
Wayne	848	--	--	--	51	--	2	6	1	77	4	--
Total	8,899	--	--	--	672	9	2	6	14	649	88	89

(Table 17 continued on next page)

(Table 17 continued)

Unit and county	Species group									
	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Southern Unit										
Alexander	23	6	16	202	89	39	11	--	38	8
Franklin	58	1	60	929	58	73	2	--	3	3
Gallatin	7	9	19	184	20	9	3	--	14	--
Hamilton	25	--	14	202	16	6	3	--	2	--
Hardin	48	7	10	195	49	6	9	--	18	--
Jackson	65	3	65	570	94	10	13	--	7	21
Johnson	40	3	16	261	96	39	8	--	41	6
Massac	11	2	18	119	37	18	4	--	21	1
Perry	16	1	7	178	38	6	3	--	--	6
Pope	20	3	24	194	92	13	13	--	25	--
Pulaski	6	1	4	65	26	11	3	--	10	--
Randolph	25	2	11	105	76	6	9	--	3	9
Saline	8	--	10	211	34	13	2	--	9	--
Union	24	5	14	265	109	41	12	--	44	9
White	22	6	135	278	79	34	21	--	31	--
Williamson	17	1	7	132	44	13	4	--	15	3
Total	415	50	430	4,090	957	337	120	--	281	66
Claypan Unit										
Bond	2	--	10	54	3	--	--	--	--	--
Calhoun	7	10	19	156	109	--	38	2	--	9
Clark	16	16	35	137	95	6	10	2	44	--
Clay	25	--	29	202	130	--	13	--	--	--
Clinton	74	34	17	218	92	--	--	--	--	--
Crawford	4	--	43	305	39	29	33	--	--	--
Cumberland	6	15	13	63	64	1	1	2	7	--
Edwards	34	--	10	91	27	1	3	--	2	--
Effingham	19	9	22	84	30	--	9	--	--	--
Fayette	25	2	41	189	49	4	10	2	--	1
Greene	8	2	9	66	56	--	6	--	--	7
Jasper	13	3	60	191	18	16	27	--	--	--
Jefferson	9	--	5	270	58	2	2	--	--	--
Jersey	15	15	18	161	90	--	8	--	--	7
Lawrence	16	--	44	318	36	34	40	--	--	--
Macoupin	6	--	6	137	134	--	1	--	--	--
Madison	8	--	7	45	42	--	6	--	--	3
Marion	45	19	15	176	88	--	1	--	--	1
Monroe	16	1	13	97	75	--	11	2	--	7
Montgomery	2	--	3	25	20	--	2	--	--	--
Richland	58	--	60	147	54	--	17	--	2	--
St. Clair	32	19	3	81	46	--	2	--	--	--
Shelby	7	--	12	64	30	--	7	--	--	--
Wabash	3	--	18	41	10	2	9	--	--	--
Washington	68	31	--	210	64	--	19	--	--	--
Wayne	47	1	83	456	69	18	16	--	16	1
Total	565	177	595	3,984	1,528	113	291	10	71	36

(Table 17 continued on next page)

(Table 17 continued)

Unit and county	All species	Species group										
		Cypress	Short-leaf pine	Other pine	Ash	Bass-wood	Beech	Black-gum	Black cherry	Cotton-wood	Elm	Pecan hickory
Prairie Unit												
Adams	199	--	--	--	6	2	--	--	2	6	--	--
Boone	25	--	--	--	--	--	--	--	--	--	13	--
Brown	281	--	--	--	7	4	--	--	1	12	1	--
Bureau	139	--	--	--	6	--	--	--	6	9	2	--
Carroll	240	--	--	--	13	1	--	--	15	15	6	--
Cass	77	--	--	--	1	1	--	--	--	8	--	--
Champaign	32	--	--	--	3	1	--	--	--	1	3	3
Christian	4	--	--	--	--	--	--	--	--	1	--	--
Coles	39	--	--	--	4	--	--	--	--	1	2	2
Cook	2	--	--	--	--	--	--	--	--	1	1	--
De Kalb	51	--	--	--	3	1	--	--	1	1	2	--
Douglas	18	--	--	--	2	--	--	--	--	--	1	1
Dupage	5	--	--	--	--	--	--	--	--	--	5	--
Edgar	76	--	--	--	6	1	--	--	1	1	3	3
Fulton	1,173	--	--	--	65	22	--	--	4	143	6	1
Grundy	3	--	--	--	--	--	--	--	--	1	--	--
Hancock	43	--	--	--	--	1	--	--	--	8	1	--
Henderson	44	--	--	--	--	2	--	--	--	9	1	1
Henry	24	--	--	--	--	--	--	--	4	--	--	--
Iroquois	3	--	--	--	--	--	--	--	--	--	--	--
Jo Daviess	228	--	--	--	11	1	--	--	15	16	6	--
Kankakee	9	--	--	--	--	--	--	--	--	6	--	--
Knox	73	--	--	--	2	1	--	--	2	--	--	--
Lake	24	--	--	--	--	--	--	--	--	1	18	--
La Salle	95	--	--	--	6	--	--	--	7	9	2	--
Lee	36	--	--	--	--	--	--	--	--	1	--	--
Logan	10	--	--	--	--	--	--	--	--	3	--	--
Marshall	189	--	--	--	10	--	--	--	--	--	--	--
Mason	10	--	--	--	--	--	--	--	--	3	--	--
McDonough	111	--	--	--	1	1	--	--	1	47	--	--
McHenry	30	--	--	--	1	--	--	--	--	1	16	--
Menard	14	--	--	--	--	--	--	--	--	3	--	--
Mercer	43	--	--	--	2	--	--	--	6	--	--	--
Morgan	205	--	--	--	7	--	--	--	--	13	1	--
Ogle	120	--	--	6	3	7	--	--	2	8	9	--
Peoria	62	--	--	--	2	--	--	--	--	3	--	--
Pike	435	--	--	--	9	4	--	--	2	1	3	--
Putnam	120	--	--	--	7	--	--	--	--	--	--	--
Rock Island	55	--	--	--	2	1	--	--	3	3	1	--
Sangamon	31	--	--	--	--	--	--	--	2	1	--	--
Schuyler	396	--	--	--	7	7	--	--	2	28	--	--
Scott	77	--	--	--	--	--	--	--	--	19	--	--
Stark	3	--	--	--	--	--	--	--	--	--	--	--
Stephenson	17	--	--	--	--	1	--	--	1	--	2	--
Tazewell	89	--	--	--	6	--	--	--	--	--	--	--
Vermillion	101	--	--	--	13	2	--	--	2	1	4	6
Warren	18	--	--	--	--	--	--	--	1	--	--	--
Whiteside	65	--	--	--	2	--	--	--	1	3	2	--
Will	9	--	--	--	--	--	--	--	--	5	--	--
Winnebago	41	--	--	--	2	6	--	--	2	3	3	--
Woodford	109	--	--	--	6	--	--	--	--	--	--	--
Total	5,303	--	--	6	215	67	--	--	83	395	114	17
State total	22,403	11	16	6	1,402	76	100	59	113	1,513	382	203

(Table 17 continued on next page)

(Table 17 continued)

Unit and county	Species group									
	Other hickory	Hard maple	Soft maple	Red oak	White oak	Sweet-gum	Sycamore	Black walnut	Yellow-poplar	Other hard-woods
Prairie Unit										
Adams	2	1	43	79	51	--	2	2	--	3
Boone	--	--	--	3	9	--	--	--	--	--
Brown	3	19	15	161	55	--	2	1	--	--
Bureau	--	--	29	29	54	--	--	--	--	4
Carroll	1	--	--	92	86	--	--	2	--	9
Cass	--	2	3	45	16	--	1	--	--	--
Champaign	1	2	1	9	6	--	2	--	--	--
Christian	--	--	--	1	2	--	--	--	--	--
Coles	--	2	2	10	7	--	2	--	7	--
Cook	--	--	--	--	--	--	--	--	--	--
De Kalo	--	--	3	15	25	--	--	--	--	--
Douglas	--	1	--	6	3	--	--	--	4	--
Dupage	--	--	--	--	--	--	--	--	--	--
Edgar	2	3	4	20	16	--	3	--	13	--
Fulton	18	47	59	549	252	--	2	5	--	--
Grundy	--	--	--	--	2	--	--	--	--	--
Hancock	1	--	14	7	11	--	--	--	--	--
Henderson	--	--	8	7	16	--	--	--	--	--
Henry	--	--	--	6	12	--	--	2	--	--
Iroquois	--	--	--	2	1	--	--	--	--	--
Jo Daviess	--	3	3	88	74	--	--	2	--	9
Kankakee	--	--	--	2	1	--	--	--	--	--
Knox	1	5	3	28	24	--	--	7	--	--
Lake	--	--	--	2	3	--	--	--	--	--
La Salle	--	--	--	30	34	--	1	2	--	4
Lee	1	--	3	11	20	--	--	--	--	--
Logan	--	--	1	6	--	--	--	--	--	--
Marshall	--	28	11	81	58	--	--	1	--	--
Mason	--	--	1	6	--	--	--	--	--	--
McDonough	9	--	7	18	19	--	8	--	--	--
McHenry	--	--	--	6	6	--	--	--	--	--
Menard	--	--	1	8	2	--	--	--	--	--
Mercer	--	--	7	7	6	--	--	15	--	--
Morgan	6	12	12	97	52	--	3	2	--	--
Ogle	1	--	3	38	43	--	--	--	--	--
Peoria	1	3	1	37	15	--	--	--	--	--
Pike	6	21	9	249	127	--	1	3	--	--
Putnam	--	12	10	54	36	--	--	1	--	--
Rock Island	--	--	--	20	18	--	--	6	--	1
Sangamon	--	--	3	9	16	--	--	--	--	--
Schuyler	4	32	39	220	51	--	4	2	--	--
Scott	--	--	--	42	15	--	1	--	--	--
Stark	--	--	--	--	3	--	--	--	--	--
Stephenson	--	--	--	6	7	--	--	--	--	--
Tazewell	--	7	5	39	32	--	--	--	--	--
Vermillion	2	5	3	24	16	--	4	1	18	--
Warren	--	--	3	2	2	--	--	10	--	--
Whiteside	--	--	9	18	30	--	--	--	--	--
Will	--	--	--	2	1	--	--	--	--	1
Winnebago	1	--	9	2	13	--	--	--	--	--
Woodford	1	10	9	51	31	--	--	1	--	--
Total	61	215	333	2,244	1,379	--	36	65	42	31
State total	1,041	442	1,358	10,318	3,864	450	447	75	394	133

Table 18.--Residue produced at primary wood-using mills by type of material, type of use, and county, Illinois, 1983

(In thousand tons green weight)

County and type of use	SOUTHERN UNIT							
	Wood residue							
	Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Alexander								
Domestic fuel	--	--	--	--	--	--	--	--
Miscellaneous[3]	0.15	7.36	--	--	0.15	7.36	0.11	5.24
Not used	.26	12.66	0.26	12.65	--	.01	--	.05
Total	.41	20.02	.26	12.65	.15	7.37	.11	5.29
Franklin								
Domestic fuel	--	10.54	--	10.54	--	--	--	4.48
Miscellaneous[3]	--	3.40	--	--	--	3.40	--	--
Not used	--	3.55	--	.52	--	3.03	--	.22
Total	--	17.49	--	11.06	--	6.43	--	4.70
Gallatin								
Fiber products	--	8.20	--	8.20	--	--	--	--
Industrial fuel	--	4.50	--	.03	--	4.47	--	1.19
Domestic fuel	.01	.28	.01	.12	--	.16	--	--
Miscellaneous[3]	--	.16	--	--	--	.16	--	1.15
Not used	--	.13	--	.04	--	.09	--	1.22
Total	.01	13.27	.01	8.39	--	4.88	--	3.56
Hamilton								
Domestic fuel	--	3.70	--	3.70	--	--	--	1.57
Miscellaneous[3]	--	1.08	--	--	--	1.08	--	--
Not used	--	1.08	--	--	--	1.08	--	--
Total	--	5.86	--	3.70	--	2.16	--	1.57
Hardin								
Domestic fuel	--	.44	--	.37	--	.07	--	.15
Not used	--	.29	--	.09	--	.20	--	.04
Total	--	.73	--	.46	--	.27	--	.19
Jackson								
Domestic fuel	--	.92	--	.92	--	--	--	.39
Miscellaneous[3]	--	.53	--	--	--	.53	--	--
Total	--	1.45	--	.92	--	.53	--	.39

(Table 18 continued on next page)

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

SOUTHERN UNIT

County and type of use	Wood residue							
	Total		Coarse[1/]		Fine[2/]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Johnson								
Domestic fuel	--	1.88	--	1.88	--	--	--	.79
Miscellaneous[3/]	--	.99	--	--	--	.99	--	--
Not used	--	.94	--	.18	--	.76	--	.08
Total	--	3.81	--	2.06	--	1.75	--	.87
Perry								
Fiber products	--	4.09	--	3.97	--	.12	--	.09
Industrial fuel	.01	.04	.01	--	--	.04	--	.03
Domestic fuel	--	2.87	--	2.87	--	--	--	1.20
Miscellaneous[3/]	--	2.65	--	--	--	2.65	--	1.57
Not used	--	1.17	--	--	--	1.17	--	--
Total	.01	10.82	.01	6.84	--	3.98	--	2.89
Pope								
Domestic fuel	.01	.40	.01	.40	--	--	--	.17
Miscellaneous[3/]	.01	.23	--	--	.01	.23	--	--
Total	.02	.63	.01	.40	.01	.23	--	.17
Randolph								
Domestic fuel	--	1.90	--	1.90	--	--	--	.82
Miscellaneous[3/]	--	.50	--	--	--	.50	--	--
Not used	--	.61	--	--	--	.61	--	--
Total	--	3.01	--	1.90	--	1.11	--	.82
Union								
Fiber products	--	8.87	--	8.87	--	--	--	--
Industrial fuel	--	5.17	--	--	--	5.17	--	3.71
Domestic fuel	--	.03	--	.03	--	--	--	.01
Miscellaneous[3/]	--	.01	--	--	--	.01	--	--
Not used	--	.01	--	--	--	.01	--	--
Total	--	14.09	--	8.90	--	5.19	--	3.72
White								
Fiber products	--	7.03	--	7.03	--	--	--	--
Industrial fuel	--	4.09	--	--	--	4.09	--	3.08
Domestic fuel	--	.37	--	.37	--	--	--	--
Miscellaneous[3/]	--	.22	--	--	--	.22	--	--
Total	--	11.71	--	7.40	--	4.31	--	3.08
All counties								
Fiber products	--	28.19	--	28.07	--	.12	--	.09
Industrial fuel	.01	13.80	.01	.03	--	13.77	--	8.01
Domesitc fuel	.02	23.33	.02	23.10	--	.23	--	9.58
Miscellaneous[3/]	.16	17.13	--	--	.16	17.13	.11	7.96
Not used	.26	20.44	.26	13.48	--	6.96	--	1.61
Total	.45	102.89	.29	64.68	.16	38.21	.11	27.25

(Table 18 continued on next page)

[1/] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2/] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3/] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

CLAYPAN UNIT

County and type of use	Wood residue						Bark	
	Total		Coarse[1]		Fine[2]			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Bond								
Domestic fuel	--	1.00	--	1.00	--	--	--	.42
Miscellaneous[3]	--	.76	--	.11	--	.65	--	.05
Total	--	1.76	--	1.11	--	.65	--	.47
Calhoun								
Domestic fuel	--	.89	--	.89	--	--	--	.32
Miscellaneous[3]	--	.45	--	--	--	.45	--	--
Not used	--	.13	--	.04	--	.09	--	.02
Total	--	1.47	--	.93	--	.54	--	.34
Clark								
Domestic fuel	--	1.12	--	1.12	--	--	--	.47
Miscellaneous[3]	--	.54	--	--	--	.54	--	--
Not used	--	.11	--	--	--	.11	--	--
Total	--	1.77	--	1.12	--	.65	--	.47
Clay								
Fiber products	--	3.24	--	3.24	--	--	--	--
Domestic fuel	--	2.57	--	2.57	--	--	--	.03
Miscellaneous[3]	--	3.24	--	--	--	3.24	--	2.42
Not used	--	.97	--	--	--	.97	--	--
Total	--	10.02	--	5.81	--	4.21	--	2.45
Clinton								
Fiber products	--	.44	--	.44	--	--	--	--
Domestic fuel	--	3.26	--	3.26	--	--	--	1.36
Miscellaneous[3]	--	3.01	--	--	--	3.01	--	.20
Not used	--	1.92	--	1.76	--	.16	--	.75
Total	--	8.63	--	5.46	--	3.17	--	2.31
Crawford								
Fiber products	--	9.25	--	9.25	--	--	--	--
Industrial fuel	--	5.38	--	--	--	5.38	--	3.82
Domestic fuel	--	.05	--	.05	--	--	--	.03
Miscellaneous[3]	--	.04	--	--	--	.04	--	--
Not used	--	.17	--	.05	--	.12	--	.03
Total	--	14.89	--	9.35	--	5.54	--	3.88
Cumberland								
Domestic fuel	--	.43	--	.43	--	--	--	.18
Miscellaneous[3]	--	.25	--	--	--	.25	--	--
Total	--	.68	--	.43	--	.25	--	.18

(Table 18 continued on next page)

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

CLAYPAN UNIT

County and type of use	Wood residue							
	Total		Coarse[1/]		Fine[2/]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Effingham								
Fiber products	--	.71	--	.71	--	--	--	--
Domestic fuel	--	.59	--	.59	--	--	--	.10
Miscellaneous[3/]	--	.75	--	--	--	.75	--	.44
Not used	--	.03	--	.02	--	.01	--	.01
Total	--	2.08	--	1.32	--	.76	--	.55
Fayette								
Fiber products	--	5.87	--	5.87	--	--	--	--
Industrial fuel	--	.14	--	.14	--	--	--	.06
Domestic fuel	--	1.14	--	1.14	--	--	--	.46
Miscellaneous[3/]	--	4.12	--	--	--	4.12	--	2.50
Not used	--	.26	--	.14	--	.12	--	.06
Total	--	11.53	--	7.29	--	4.24	--	3.08
Greene								
Domestic fuel	--	.20	--	.19	--	.01	--	.08
Miscellaneous[3/]	--	.08	--	--	--	.08	--	--
Not used	--	.03	--	--	--	.03	--	--
Total	--	.31	--	.19	--	.12	--	.08
Jasper								
Domestic fuel	--	.23	--	.23	--	--	--	.10
Miscellaneous[3/]	--	.13	--	--	--	.13	--	--
Total	--	.36	--	.23	--	.13	--	.10
Jefferson								
Domestic fuel	--	1.53	--	1.18	--	.35	--	.51
Miscellaneous[3/]	--	.34	--	--	--	.34	--	--
Total	--	1.87	--	1.18	--	.69	--	.51
Jersey								
Domestic fuel	--	4.53	--	3.14	--	1.39	--	1.32
Miscellaneous[3/]	--	1.24	--	--	--	1.24	--	--
Not used	--	.50	--	.44	--	.06	--	.19
Total	--	6.27	--	3.58	--	2.69	--	1.51
Lawrence								
Domestic fuel	--	.81	--	.81	--	--	--	.12
Miscellaneous[3/]	--	.39	--	--	--	.39	--	.22
Not used	--	1.04	--	.61	--	.43	--	.25
Total	--	2.24	--	1.42	--	.82	--	.59

(Table 18 continued on next page)

[1/] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2/] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3/] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

CLAYPAN UNIT

County and type of use	Wood residue							
	Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Macoupin								
Domestic fuel	--	3.32	--	3.32	--	--	--	1.41
Miscellaneous[3]	--	1.94	--	--	--	1.94	--	--
Total	--	5.26	--	3.32	--	1.94	--	1.41
Marion								
Fiber products	--	4.27	--	4.27	--	--	--	--
Miscellaneous[3]	--	2.18	--	--	--	2.18	--	.91
Not used	--	.30	--	--	--	.30	--	.87
Total	--	6.75	--	4.27	--	2.48	--	1.78
Monroe								
Domestic fuel	--	1.32	--	1.32	--	--	--	.55
Miscellaneous[3]	--	.77	--	--	--	.77	--	--
Total	--	2.09	--	1.32	--	.77	--	.55
Montgomery								
Domestic fuel	--	.31	--	.31	--	--	--	.13
Miscellaneous[3]	--	.18	--	--	--	.18	--	--
Total	--	.49	--	.31	--	.18	--	.13
Richland								
Fiber products	--	8.42	--	8.42	--	--	--	--
Industrial fuel	--	4.56	--	--	--	4.56	--	3.30
Miscellaneous[3]	--	.35	--	--	--	.35	--	.24
Total	--	13.33	--	8.42	--	4.91	--	3.54
St. Clair								
Domestic fuel	--	.06	--	.06	--	--	--	.02
Miscellaneous[3]	--	.03	--	--	--	.03	--	--
Total	--	.09	--	.06	--	.03	--	.02
Shelby								
Domestic fuel	--	.01	--	.01	--	--	--	.01
Miscellaneous[3]	--	.01	--	--	--	.01	--	--
Not used	--	.43	--	.27	--	.16	--	.11
Total	--	.45	--	.28	--	.17	--	.12
Wabash								
Industrial fuel	--	.21	--	--	--	.21	--	--
Domestic fuel	--	.79	--	.79	--	--	--	.34
Miscellaneous[3]	--	.24	--	--	--	.24	--	--
Total	--	1.24	--	.79	--	.45	--	.34
Washington								
Fiber products	--	.93	--	.93	--	--	--	--
Domestic fuel	--	4.38	--	4.38	--	--	--	1.85
Miscellaneous[3]	--	3.34	--	--	--	3.34	--	--
Not used	--	3.47	--	2.35	--	1.12	--	1.38
Total	--	12.12	--	7.66	--	4.46	--	3.23

(Table 18 continued on next page)

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

County and type of use	Wood residue: Total		Coarse[1/]		Fine[2/]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
CLAYPAN UNIT								
Wayne								
Fiber products	--	1.85	--	1.85	--	--	--	--
Domestic fuel	--	8.69	--	7.06	--	1.63	--	2.98
Miscellaneous[3/]	--	3.56	--	--	--	3.56	--	.78
Total	--	14.10	--	8.91	--	5.19	--	3.76
All counties								
Fiber products	--	34.98	--	34.98	--	--	--	--
Industrial fuel	--	10.29	--	.14	--	10.15	--	7.18
Domestic fuel	--	37.23	--	33.85	--	3.38	--	12.79
Miscellaneous[3/]	--	27.94	--	.11	--	27.83	--	7.76
Not used	--	9.36	--	5.68	--	3.68	--	3.67
Total	--	119.80	--	74.76	--	45.04	--	31.40
PRAIRIE UNIT								
Adams								
Domestic fuel	--	.38	--	.38	--	--	--	.12
Miscellaneous[3/]	--	.19	--	--	--	.19	--	--
Not used	--	.04	--	--	--	.04	--	.05
Total	--	.61	--	.38	--	.23	--	.17
Boone								
Domestic fuel	--	.26	--	.26	--	--	--	.11
Miscellaneous[3/]	--	.16	--	--	--	.16	--	--
Not used	--	.01	--	.01	--	--	--	.01
Total	--	.43	--	.27	--	.16	--	.12
Brown								
Domestic fuel	--	.02	--	.02	--	--	--	.01
Miscellaneous[3/]	--	.01	--	--	--	.01	--	--
Total	--	.03	--	.02	--	.01	--	.01
Bureau								
Domestic fuel	--	.01	--	.01	--	--	--	--
Not used	--	--	--	--	--	--	--	--
Total	--	.01	--	.01	--	--	--	--
Carroll								
Fiber products	--	5.67	--	5.67	--	--	--	--
Domestic fuel	.01	1.11	.01	1.11	--	--	--	.05
Miscellaneous[3/]	.01	3.95	--	--	.01	3.95	--	2.84
Total	.02	10.73	.01	6.78	.01	3.95	--	2.89
Cass								
Fiber products	--	4.44	--	4.44	--	--	--	--
Industrial fuel	--	2.58	--	--	--	2.58	--	1.88
Total	--	7.02	--	4.44	--	2.58	--	1.88
Cook								
Fiber products	--	.74	--	.74	--	--	--	--
Miscellaneous[3/]	--	1.60	--	.74	--	.86	--	.61
Total	--	2.34	--	1.48	--	.86	--	.61

(Table 18 continued on next page)

[1/] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2/] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3/] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

PRAIRIE UNIT

County and type of use	Wood residue							
	Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
De Kalb								
Domestic fuel	--	.14	--	.14	--	--	--	.06
Miscellaneous[3]	--	.08	--	--	--	.08	--	--
Total	--	.22	--	.14	--	.08	--	.06
Edgar								
Industrial fuel	--	.68	--	.43	--	.25	--	.18
Total	--	.68	--	.43	--	.25	--	.18
Fulton								
Fiber products	--	4.98	--	4.98	--	--	--	--
Miscellaneous[3]	--	2.90	--	--	--	2.90	--	2.12
Not used	--	2.93	--	1.85	--	1.08	--	.79
Total	--	10.81	--	6.83	--	3.98	--	2.91
Grundy								
Domestic fuel	--	.04	--	.04	--	--	--	.02
Not used	--	.02	--	--	--	.02	--	--
Total	--	.06	--	.04	--	.02	--	.02
Hancock								
Domestic fuel	--	.04	--	.04	--	--	--	.01
Miscellaneous[3]	--	.06	--	--	--	.06	--	--
Not used	--	.07	--	.07	--	--	--	.03
Total	--	.17	--	.11	--	.06	--	.04
Henderson								
Domestic fuel	--	.09	--	.09	--	--	--	.04
Miscellaneous[3]	--	.05	--	--	--	.05	--	--
Total	--	.14	--	.09	--	.05	--	.04
Henry								
Fiber products	--	2.78	--	2.78	--	--	--	--
Industrial fuel	.01	1.89	.01	.27	--	1.62	.01	1.29
Domestic fuel	--	.44	--	.44	--	--	--	--
Miscellaneous[3]	.01	.28	--	--	.01	.28	--	--
Not used	--	.12	--	--	--	.12	--	.20
Total	.02	5.51	.01	3.49	.01	2.02	.01	1.49
Jo Daviess								
Domestic fuel	--	.15	--	.15	--	--	--	.06
Miscellaneous[3]	--	.07	--	--	--	.07	--	--
Not used	--	.01	--	--	--	.01	--	--
Total	--	.23	--	.15	--	.08	--	.06
Kane								
Domestic fuel	--	.28	--	.28	--	--	--	.12
Miscellaneous[3]	--	.16	--	--	--	.16	--	--
Total	--	.44	--	.28	--	.16	--	.12

(Table 18 continued on next page)

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

PRAIRIE UNIT

County and type of use	Wood residue: Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Knox								
Domestic fuel	--	.05	--	.05	--	--	--	.02
Miscellaneous[3]	--	.03	--	--	--	.03	--	--
Total	--	.08	--	.05	--	.03	--	.02
Mason								
Fiber products	--	2.69	--	2.69	--	--	--	--
Domestic fuel	--	3.68	--	3.68	--	--	--	--
Miscellaneous[3]	--	3.32	--	--	--	3.32	--	2.71
Not used	--	.39	--	--	--	.39	--	--
Total	--	10.08	--	6.37	--	3.71	--	2.71
McDonough								
Domestic fuel	--	.91	--	.91	--	--	--	.38
Not used	--	.53	--	--	--	.53	--	--
Total	--	1.44	--	.91	--	.53	--	.38
McHenry								
Industrial fuel	--	.94	--	.94	--	--	--	--
Domestic fuel	.01	.22	.01	.22	--	--	--	.09
Miscellaneous[3]	--	.68	--	--	--	.68	--	.80
Not used	--	4.46	--	2.82	--	1.64	--	.80
Total	.01	6.30	.01	3.98	--	2.32	--	1.69
Ogle								
Domestic fuel	.06	3.50	.06	3.50	--	--	.03	1.48
Miscellaneous[3]	.07	2.03	--	--	.07	2.03	--	--
Not used	.06	.47	.06	.30	--	.17	.03	.13
Total	.19	6.00	.12	3.80	.07	2.20	.06	1.61
Peoria								
Domestic fuel	--	.03	--	.03	--	--	--	.02
Miscellaneous[3]	--	.02	--	--	--	.02	--	--
Total	--	.05	--	.03	--	.02	--	.02
Pike								
Fiber products	--	2.75	--	2.75	--	--	--	--
Domestic fuel	--	.29	--	.29	--	--	--	.13
Miscellaneous[3]	--	.17	--	--	--	.17	--	--
Not used	--	1.60	--	--	--	1.60	--	1.17
Total	--	4.81	--	3.04	--	1.77	--	1.30
Rock Island								
Industrial fuel	--	3.24	--	1.24	--	2.00	--	.91
Total	--	3.24	--	1.24	--	2.00	--	.91
Sangamon								
Domestic fuel	--	.31	--	.31	--	--	--	.13
Miscellaneous[3]	--	.17	--	--	--	.17	--	--
Not used	--	.01	--	--	--	.01	--	--
Total	--	.49	--	.31	--	.18	--	.13
Scott								
Domestic fuel	--	.99	--	.56	--	.43	--	.24
Not used	--	.19	--	.19	--	--	--	.08
Total	--	1.18	--	.75	--	.43	--	.32

(Table 18 continued on next page)

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

(Table 18 continued)

PRAIRIE UNIT

County and type of use	Wood residue: Total		Coarse[1]		Fine[2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Stephenson								
Domestic fuel	--	.14	--	.14	--	--	--	.05
Miscellaneous[3]	--	.08	--	--	--	.08	--	--
Not used	--	.02	--	.01	--	.01	--	--
Total	--	.24	--	.15	--	.09	--	.05
Tazewell								
Fiber products	--	13.14	--	13.14	--	--	--	--
Industrial fuel	--	1.87	--	--	--	1.87	--	--
Domestic fuel	--	2.17	--	2.17	--	--	--	.01
Miscellaneous[3]	--	7.01	--	--	--	7.01	--	6.50
Not used	--	.03	--	--	--	.03	--	--
Total	--	24.22	--	15.31	--	8.91	--	6.51
Whiteside								
Domestic fuel	--	.03	--	.03	--	--	--	.01
Miscellaneous[3]	--	--	--	--	--	--	--	--
Not used	--	--	--	--	--	--	--	--
Total	--	.03	--	.03	--	--	--	.01
Winnebago								
Domestic fuel	.01	.11	.01	.11	--	--	.01	.07
Miscellaneous[3]	.01	.11	--	--	.01	.11	--	--
Not used	--	.08	--	.08	--	--	--	.01
Total	.02	.30	.01	.19	.01	.11	.01	.08
Woodford								
Domestic fuel	--	.03	--	.03	--	--	--	.01
Miscellaneous[3]	--	.02	--	--	--	.02	--	--
Total	--	.05	--	.03	--	.02	--	.01
All counties								
Fiber products	--	37.19	--	37.19	--	--	--	--
Industrial fuel	.01	11.20	.01	2.88	--	8.32	.01	4.26
Domestic fuel	.09	15.42	.09	14.99	--	.43	.04	3.24
Miscellaneous[3]	.10	23.15	--	.74	.10	22.41	--	15.58
Not used	.06	10.98	.06	5.33	--	5.65	.03	3.27
Total	.26	97.94	.16	61.13	.10	36.81	.08	26.35
Total Illinois								
Fiber products	--	100.36	--	100.24	--	.12	--	.09
Industrial fuel	.02	35.29	.02	3.05	--	32.24	.01	19.45
Domestic fuel	.11	75.98	.11	71.94	--	4.04	.04	25.61
Miscellaneous[3]	.26	68.22	--	.85	.26	67.37	.11	31.30
Not used	.32	40.78	.32	24.49	--	16.29	.03	8.55
Total	.71	320.63	.45	200.57	.26	120.06	.19	85.00

[1] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3] Livestock bedding, mulch, poultry litter, etc.

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Illinois timber industry—an assessment of timber product output and use. Resour. Bull. NC-100. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1987. 44 p.

Discusses recent Illinois forest industry trends; production and receipts of saw logs; and production of pulpwood, veneer logs, fuelwood, and other products in 1983. Reports on logging residue, on wood and bark residue generated at primary wood-using mills, and on disposition of this mill residue.

KEY WORDS: Saw logs, pulpwood, veneer logs, fuelwood, residue.

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